

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 d 8  
 Edition : 28.06.89  
 Replaces : -  
 Test oil : ISO-4113  
  
 Combination no. : 0 401 848 804  
  
 Injection pump  
 Pump designation : PE8P110A320LS3842-1  
 EP type number : 0 411 818 716  
 Governor  
 Governor design. : RQV350..1050PA378-7  
 Governer no. : 0 421 813 714

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM442

1st version kW : 213.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

A01

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.70...12.80

Del.quantity cm<sup>3</sup>/ : 12.4...12.6

100 s: (12.1...12.8)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 350.0

Rack travel in mm : 8.0...8.3

Del.quantity cm<sup>3</sup>/ : 1.5...2.1

100 s: (1.2...2.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.50...1.70

2nd speed rpm : 800  
travel mm : 4.90...5.30

3rd speed rpm : 1100  
travel mm : 7.90...8.50

4th speed rpm : 1150  
travel mm : 8.90...9.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1110

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 124.0...126.0

1000 : (121.5...128.5)

Spread cm3 : 4.00  
1000 : (7.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 56...64

Testing:  
1st rack travel in: 11.70  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 10...18

Testing:  
Speed rpm : 250  
Minimum rack trave: 9.50  
Speed rpm : 350  
Rack travel in mm : 8.00...8.30

CONSTANT REGULATION  
Speed rpm : 350...450

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 1050  
Del.quantity cm3/ : 137.0...141.0  
1000 s: (134.0...144.0)  
Spread cm3 : 5.00  
1000 s: (8.00)  
Speed rpm : 1050  
Del.quantity cm3/ : 87.0...89.0 \*  
1000 s: (84.0...92.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.70  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

A02

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

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\* = Set at reduced-delivery stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 17,4 b  
Edition : 29.03.89  
Replaces : 11.85  
Test oil : ISO-4113

Combination no. : 0 401 849 160

Injection pump  
Pump designation : PE10P100A320LS842  
EP type number : 0 411 809 134  
Governor  
Governor design. : RQ300/1150PA187-2R  
Governor no. : 0 421 801 112

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 403

1st version kW : 259.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
                  : (3.35...3.55)

Rack travel in mm : 9.00...12.00

A03

Firing order : 10- 9- 4- 1- 8- 7  
                  - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
                  216-261-288-333

Tolerance + - : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.00...12.10

Del. quantity cm<sup>3</sup>/ : 11.5...11.7

100 s: (11.3...11.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 7.4...7.6

Del. quantity cm<sup>3</sup>/ : 1.3...1.9

100 s: (1.0...2.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.80...14.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del. quantity : 115.5...117.5

1000 : (113.5...119.5)

Spread cm<sup>3</sup> : 3.00

1000 : (5.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 14.2

Testing:

1st rack travel in: 11.00

Speed rpm : 1195...1210

2nd rack travel in: 4.00

Speed rpm : 1235...1265

4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.5

Testing:

Speed rpm : 100  
Minimum rack trave: 9.00  
Speed rpm : 300  
Rack travel in mm : 7.40...7.60  
Rack travel in mm : 2.00  
Speed rpm : 410...450

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 600  
Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm3/ : 100.5...105.5  
1000 s: (98.5...107.5)  
Spread cm3 : 5.00  
1000 s: (7.00)

RACK STOP ADJUSTMENT

Speed rpm : 650

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1195...1210

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 125.0...145.0  
1000 s: (121.0...149.0)

Remarks:

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# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 18,3 d 7  
Edition : 09.06.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 849 706  
  
Injection pump  
Pump designation : PE10P110A320LS3818-10  
EP type number : 0 411 819 705  
Governor  
Governor design. : RQV300...1150PA486-5  
Governor no. : 0 421 813 752

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 423

1st version kW : 261.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 130...150

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

A05

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 10- 9- 4- 1- 8- 7  
                  : - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
Phasing : 216-261-288-333  
Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.20...11.30

Del. quantity cm<sup>3</sup>/ : 12.6...12.8

100 s: (12.3...13.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 7.9...8.1

Del. quantity cm<sup>3</sup>/ : 1.4...2.2

100 s: (1.1...2.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.60...1.80

2nd speed rpm : 800

travel mm : 4.50...5.00

3rd speed rpm : 1150

travel mm : 7.50...8.00

4th speed rpm : 1250

travel mm : 9.50...10.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1230

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 126.0...128.0  
1000 : (123.5...130.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (8.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 63...71

#### Testing:

1st rack travel in: 10.20  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1230...1260  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 16...24

#### Testing:

Speed rpm : 200  
Minimum rack travel: 10.20  
Speed rpm : 300  
Rack travel in mm : 7.90...8.10

#### CONSTANT REGULATION

Speed rpm : 300...600

#### TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 11.20...11.30  
2nd speed rpm : 600  
Rack travel in m: 11.50...11.70  
3rd speed rpm : 900  
Rack travel in m: 11.50...11.70

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 110.0...114.0  
1000 s: (107.0...117.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)

#### BREAKAWAY

1st version

A06

1mm rack travel less than

full load rack tr: 10.20  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

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# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 18,2 c  
 Edition : 07.02.89  
 Replaces : 22.1.88  
 Test oil : ISO-4113  
  
 Combination no. : 0 401 849 734  
  
 Injection pump  
 Pump designation : PE10P120A520/4LS3843  
 EP type number : 0 411 829 707  
 Governor  
 Governor design. : RQ300/1000PA837  
 Govenner no. : 0 421 801 372

Customer-spec. information  
 Customer : MAN

Engine : D2840LF/460

1st version kW : 338.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

A07

Prestroke mm : 3.90...4.00  
 : (3.85...4.05)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 10- 9- 4- 1- 8- 7  
 : - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
 216-261-288-333

Tolerance + - : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.30...11.40

Del.quantity cm<sup>3</sup>/ : 20.4...20.6

100 s: (20.1...20.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.2

Del.quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 204.0...206.0

1000 : (201.0...209.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.30  
Speed rpm : 1045...1060  
2nd rack travel in: 4.00  
Speed rpm : 1125...1155  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.1

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.60  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 365...405

TORQUE CONTROL  
Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 600  
Rack travel in m: 11.80...12.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.30...11.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.10...10.20  
2nd pressure hPa : 380  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : 500  
Rack travel in m: 10.90...11.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 144.0...146.0  
1000 s: (141.0...149.0)

A08

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 190.0...210.0  
1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7778



**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : MAN 18,2 c1  
 Edition : 07.02.89  
 Replaces : 22.1.88  
 Test oil : ISO-4113

Combination no. : 0 401 849 735

Injection pump  
 Pump designation : PE10P120A520/4LS3843  
 EP type number : 0 411 829 707  
 Governor  
 Governor design. : RQV300...1000PA838  
 Govenrer no. : 0 421 813 585

Customer-spec. information  
 Customer : MAN

Engine : D2840LF/460

1st version kW : 338.0  
 Rated speed : 2000

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 3.90...4.00  
 : (3.85...4.05)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 10- 9- 4- 1- 8- 7  
 - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
 216-261-288-333  
 Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 10

**BASIC SETTING**

1st speed rpm : 1000

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Rack travel in mm : 11.30...11.40

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Del.quantity cm<sup>3</sup>/ : 20.4...20.6  
 100 s: (20.1...20.9)

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Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 6.0...6.2  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s: (1.4...2.6)

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Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 300  
 travel mm : 1.00...1.40  
 2nd speed rpm : 500  
 travel mm : 3.10...3.50  
 3rd speed rpm : 850  
 travel mm : 6.60...6.90  
 4th speed rpm : 1000  
 travel mm : 7.70...7.90

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1  
 Speed rpm : 1150  
 Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1000  
 Aneroid pressure h: 1000

Del.quantity : 204.0...206.0  
1000 : (201.0...209.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 49...57

Testing:  
1st rack travel in: 10.30  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1115...1145  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 13...21

Testing:  
Speed rpm : 100  
Minimum rack trave: 7.60  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20

CONSTANT REGULATION  
Speed rpm : 335...445

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.30...11.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.10...10.20  
2nd pressure hPa : 380  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : 500  
Rack travel in m: 10.90...11.10

#### START CUT-OUT

Speed 1/min : 230 (250)

#### FUEL DELIVERY CHARACTERISTICS

1st version

A10

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 144.0...146.0  
1000 s: (141.0...149.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7779

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 17,4 c1  
 Edition : 28.04.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 849 744  
 Injection pump  
 Pump designation : PE10P120A520/4LS3833  
 EP type number : 0 411 829 706  
 Governor  
 Governor design. : RQ750PA663-7  
 Govenner no. : 0 421 801 331

Customer-spec. information  
 Customer : MAN

Engine : D2840 LE

1st version kW : 352.0  
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30  
 : (4.15...4.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 10- 9- 4- 1- 8- 7  
 - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
 216-261-288-333

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.3

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 11.30

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 790...803

4th rack travel in: 950

Speed rpm : 0.00...1.00

STARTING FUEL DELIVERY

Speed rpm : 100

Remarks: : MAN-NR. 2-7975

APPLICATION

Generator set



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 17,4 d  
 Edition : 23.06.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 849 744

Injection pump  
 Pump designation : PE10P120A520/4LS3849  
 EP type number : 0 411 829 708  
 Governor  
 Governor design. : RQ750PA663-7  
 Governor no. : 0 421 801 331

Customer-spec. information  
 Customer : MAN

Engine : D2840 LE

1st version kW : 352.0  
 Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30  
 : (4.15...4.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 10- 9- 4- 1- 8- 7  
 - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
 216-261-288-333  
 Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.30...12.40

Del. quantity cm<sup>3</sup>/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.3...4.7

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del. quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Testing:

1st rack travel in: 11.30

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 790...803

4th rack travel in: 950

Speed rpm : 0.00...1.00

## STARTING FUEL DELIVERY

Speed rpm : 100

Remarks: : MAN-NR. 2-7975

APPLICATION

Generator set



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE 9,7 a  
 Edition : 28.06.89  
 Replaces : 8.83  
 Test oil : ISO-4113

Combination no. : 0 401 856 702

Injection pump  
 Pump designation : PE6P110A721RS3102  
 EP type number : 0 411 816 726  
 Governor  
 Governor design. : RQV250...1200PA257-1  
 Governor no. : 0 421 813 334

Customer-spec. information  
 Customer : STEYR

Engine : WD615.84

1st version kW : 191.0  
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

A15

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 15.1...15.3

100 s: (14.8...15.6)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 250.0

Rack travel in mm : 7.0...7.2

Del.quantity cm3/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 0.90...1.30

2nd speed rpm : 400  
 travel mm : 2.30...2.70

3rd speed rpm : 800  
 travel mm : 4.40...5.00

4th speed rpm : 1240  
 travel mm : 8.10...8.30

5th speed rpm : 1325  
 travel mm : 9.40...9.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1250

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del.quantity : 151.0...153.0

1000 : (148.0...156.0)

Spread cm<sup>3</sup> : 4.00  
1000 : (8.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 44...52

Testing:  
1st rack travel in: 11.60  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1310...1340  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 13...21

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.50  
Speed rpm : 250  
Rack travel in mm : 7.00...7.20

CONSTANT REGULATION  
Speed rpm : 250...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 12.60...12.70

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.20...10.30  
2nd pressure hPa : 460  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 330  
Rack travel in m: 10.80...11.00

#### START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 700

Del.quantity cm<sup>3</sup>/ : 147.0...151.0  
1000 s: (144.0...154.0)  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 99.0...103.0  
1000 s: (96.0...106.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.60  
Speed rpm : 1240...1250

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 210.0...240.0

Remarks:

#### APPLICATION

Tractor (tractor engines)



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 21,6 a4  
Edition : 24.02.89  
Replaces : 6.4.88  
Test oil : ISO-4113

Combination no. : 0 401 870 091

Injection pump  
Pump designation : PE12P120A520/5RS428-  
1  
EP type number : 0 411 820 034  
Governor  
Governor design. : RSUV300...900POA320-  
1  
Governor no. : 0 421 829 107

Customer-spec. information  
Customer : MWM

Engine : TBD 234 V12

1st version kW : 600.0  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 2- 9- 10- 5- 6-  
11- 12- 3- 4- 7- 8

Phasing : 0-30-60-90-120-150-  
180-210-240-270-300-  
330  
Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 750

---

Rack travel in mm : 13.70...13.80

---

Del.quantity cm<sup>3</sup>/ : 24.9...25.1  
100 s: (24.6...25.4)

---

Spread cm<sup>3</sup> : 0.5  
100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 5.7...5.9  
Del.quantity cm<sup>3</sup>/ : 2.0...2.6  
100 s: (1.7...2.9)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 3.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 750  
Del.quantity : 249.0...251.0  
1000 : (246.0...254.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 65...73

Testing:

1st rack travel in: 12.70  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 965...995  
4th rack travel in: 1130  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever  
position degrees: 14...22  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.3  
Speed rpm : 300  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 320...380

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 13.70...13.80  
2nd speed rpm : 450  
Rack travel in m: 13.70...13.80  
3rd speed rpm : 280  
Rack travel in m: 14.90...15.50

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.70  
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.70...5.90  
Del.quantity cm<sup>3</sup>/ : 20.0...26.0  
1000 s: (17.0...29.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

APPLICATION

Generator set

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 9,6 h 1  
Edition : 23.06.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 876 220  
  
Injection pump  
Pump designation : PE6P100A320LS805  
EP type number : 0 411 806 148  
Governor  
Governor design. : RSV575...1250P1A817  
Governor no. : 0 421 833 322

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 401

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42  
  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 3.40...3.50  
                  : (3.35...3.55)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1230

Rack travel in mm : 10.10...10.20

Del.quantity cm<sup>3</sup>/ : 9.3...9.5

100 s: (9.1...9.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 575.0

Rack travel in mm : 6.0...6.3

Del.quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1230

Del.quantity : 93.0...95.0

1000 : (91.0...97.0)

Spread cm<sup>3</sup> : 3.00

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 59...67

Testing:

1st rack travel in: 9.10

Speed rpm : 1265...1275

2nd rack travel in: 4.10

Speed rpm : 1290...1305

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 26...34  
Setting point w/out bumper spring  
Speed rpm : 575  
Rack travel in mm : 4.7  
Speed rpm : 575  
Rack travel in mm : 4.60...4.80  
Rack travel in mm : 2.00  
Speed rpm : 570...630

SET IDLE AUXILIARY SPRING  
Speed rpm : 575  
Rack travel in mm : 1.50...2.00

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.10  
Speed rpm : 1265...1275

STARTING FUEL DELIVERY  
Del.quantity cm<sup>3</sup>/ : 120.0...140.0  
1000 s: (116.0...144.0)

#### HIGH IDLE

1st version  
Rack travel in mm : 4.00...4.20  
Spread cm<sup>3</sup> : 4.00

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PEN 7,0 l  
Edition : 18.07.89  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 401 876 232

Injection pump  
Pump designation : PE6P110A320RS374  
Governor  
Governor design. : RSV200...1200P1/365R

Customer-spec. information  
Customer : VOLVO-PENTA

Engine : TMD 70 C

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 3,0...3,1  
                  : (2,95...3,15)  
Rack travel in mm : 9,00...12,00  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - : 0,50 (0,75)

## BASIC SETTING

A21

1st speed rpm : 1200

---

Rack travel in mm : 10,50...10,60

---

Del. quantity cm<sup>3</sup>/ : 9,1...9,3

---

100 s : (8,8...9,6)

---

Spread cm<sup>3</sup> : 0,4

---

100 s : (-)

2nd speed rpm : 200  
Rack travel in mm : 8,60...8,70  
Del. quantity cm<sup>3</sup>/ : 1,7...2,7  
100 s : (-)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1200  
Del. quantity : 91,0...93,0  
1000 : (88,0...96,0)  
Spread cm<sup>3</sup> : 4,0  
1000 : (-)

## RATED SPEED

1st version  
Control lever  
position degrees: 64...72

Testing:  
1st rack travel in: 9,50  
Speed rpm : 1240...1250  
2nd rack travel in: 4,00  
Speed rpm : 1295...1325  
4th rack travel in: 1400  
Speed rpm : 0,30...1,70

## LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 200  
Rack travel in mm : 8,10

Testing:  
Speed rpm : 100  
Minimum rack travel: 20,00  
Speed rpm : 200

Rack travel in mm : 8,60...8,70  
Rack travel in mm : 2,00  
Speed rpm : 390...450  
Speed rpm : 550  
Maximum rack trave: 1,00

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9,50  
Speed rpm : 1240...1250

HIGH IDLE

1st version  
Speed rpm : 1310  
Rack travel in mm : 4,00...4,10

LOW IDLE

Speed rpm : 200  
Del.quantity cm<sup>3</sup>/ : 19...29  
1000 s: (-)

Remarks:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 8,3 o11  
 Edition : 21.04.89  
 Replaces : 12.9.86  
 Test oil : ISO-4113  
  
 Combination no. : 0 401 876 316  
  
 Injection pump  
 Pump designation : PE6P100A72ORS447  
 EP type number : 0 411 806 191  
 Governor  
 Governor design. : RSV250...1200P5A509-  
 1  
 Governor no. : 0 421 833 199  
  
 Customer-spec. information  
 Customer : DAF  
  
 Engine : DHT 825  
  
 1st version kW : 162.0  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
  
 Overflow valve : 1 417 413 025  
  
 Inlet press., bar : 1.50  
  
 Test nozzle holder  
 assembly : 0 681 343 009  
  
 Opening  
 pressure, bar : 172...175  
  
 Test Lines : 1 680 750 015  
  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
  
 Prestroke mm : 3.20...3.30  
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - , : 0.30 (0.75)

## BASIC SETTING

1st speed rpm : 1000  


---

 Rack travel in mm : 11.40...11.50  


---

 Del. quantity cm<sup>3</sup>/ : 11.8...12.0  
 100 s: (11.6...12.2)  


---

 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)  


---

 2nd speed rpm : 250.0  
 Rack travel in mm : 5.2...5.4  
 Del. quantity cm<sup>3</sup>/ : 0.8...1.2  
 100 s: (0.5...1.4)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Aneroid pressure h: 700  
 Del. quantity : 118.5...120.5  
 1000 : (116.5...122.5)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
 Control Lever  
 position degrees: 58...66

Testing:  
 1st rack travel in: 10.40  
 Speed rpm : 1240...1250  
 2nd rack travel in: 4.00  
 Speed rpm : 1300...1330

3rd rack travel in: 4.00  
Speed rpm : 1325...1355  
4th rack travel in: 1530  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 4.8  
Speed rpm : 250  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 540...640

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 400  
Rack travel in m: 11.60...11.80  
3rd speed rpm : 300  
Rack travel in m: 11.90...12.40

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.40...11.50

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.40...10.60  
2nd pressure hPa : 315  
Rack travel in m: 11.10...11.20  
3rd pressure hPa : 225  
Rack travel in m: 10.50...10.90

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 92.5...96.5  
1000 s: (90.0...99.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1240...1250

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...230.0  
1000 s: (206.0...234.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.20...5.40  
Del.quantity cm3/ : 8.0...12.0  
1000 s: (5.5...14.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 7,1 c  
 Edition : 24.02.89  
 Replaces : 12.9.86  
 Test oil : ISO-4113

Combination no. : 0 401 876 321

Injection pump  
 Pump designation : PE6P110A320RS497  
 EP type number : 0 411 816 165  
 Governor  
 Governor design. : RSV200...1200P1A374-  
 1  
 Governor no. : 0 421 833 204

Customer-spec. information  
 Customer : VOLVO

Engine : TD71A

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.80...11.90

Del.quantity cm<sup>3</sup>/ : 11.6...11.8  
 100 s : (11.3...12.1)

Spread cm<sup>3</sup> : 0.4  
 100 s : (0.7)

2nd speed rpm : 200.0

Rack travel in mm : 5.4...5.6

Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s : (-)

Spread cm<sup>3</sup> : 0.3  
 100 s : (0.6)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 116.0...118.0  
 1000 : (113.0...121.0)

Spread cm<sup>3</sup> : 4.00  
 1000 : (7.50)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 51...59

Testing:

1st rack travel in: 10.80  
 Speed rpm : 1210...1220

2nd rack travel in: 4.00  
 Speed rpm : 1240...1270

4th rack travel in: 1410

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 200  
Rack travel in mm : 5.0  
Speed rpm : 200  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 280...340

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 11.80...11.90

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 675  
Rack travel in m: 11.60...11.70  
3rd pressure hPa : 200  
Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm3/ : 82.0...85.0  
1000 s: (79.0...88.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.80  
Speed rpm : 1210...1220

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 160.0...190.0  
1000 s: (160.0...190.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

A26

Speed rpm : 200  
Rack travel in mm : 5.40...5.60  
Del.quantity cm3/ : 16.0...22.0  
Spread cm3 : 3.00  
1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PEN 6,1 q  
Edition : 10.02.89  
Replaces : 9.12.88  
Test oil : ISO-4113

Combination no. : 0 401 876 327

Injection pump  
Pump designation : PE6P110A320RS499  
EP type number : 0 411 816 169  
Governor  
Governor design. : RSV325...1400P2A374-  
3  
Governor no. : 0 421 833 220

Customer-spec. information  
Customer : VOLVO-PENTA

Engine : TAMD61A

1st version kW : 220.0  
Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60  
: (2.45...2.65)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.10...11.20

Del. quantity cm<sup>3</sup>/ : 12.0...12.2

100 s: (11.7...12.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 325.0

Rack travel in mm : 4.1...4.3

Del. quantity cm<sup>3</sup>/ : 1.1...1.5

100 s: (0.9...1.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 6.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 900

Del. quantity : 120.5...122.5

1000 : (117.5...125.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 10.10

Speed rpm : 1450...1460

2nd rack travel in: 4.00  
Speed rpm : 1530...1560  
4th rack travel in: 1630  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 3.7  
Speed rpm : 325  
Rack travel in mm : 4.10...4.30  
Rack travel in mm : 2.00  
Speed rpm : 380...440

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 11.00...11.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.50...8.70  
2nd pressure hPa : 360  
Rack travel in m: 8.70...8.80  
3rd pressure hPa : 730  
Rack travel in m: 10.70...10..80

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 1400  
Del.quantity cm3/ : 122.5...126.5  
1000 s: (119.5...129.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 54.5...58.5  
1000 s: (51.5...61.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1450...1460

#### STARTING FUEL DELIVERY

A28

Speed rpm : 100  
Del.quantity cm3/ : 135.0...165.0  
1000 s: (-)

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.10...4.30  
Del.quantity cm3/ : 11.0...15.0  
1000 s: (9.0...17.0)  
Spread cm3 : 3.00  
1000 s: (6.00)

Remarks:

#### APPLICATION

Navy

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 f  
Edition : 24.02.89  
Replaces : 25.3.88  
Test oil : ISO-4113

Combination no. : 0 401 876 332

Injection pump  
Pump designation : PE6P100A820LS130  
EP type number : 0 411 806 179  
Governor  
Governor design. : RSV250...1000P1A532  
Governor no. : 0 421 833 273

Customer-spec. information  
Customer : ENASA

Engine : 95 T1 AX,

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
                  : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 750

---

Rack travel in mm : 11.90...12.00

---

Del. quantity cm<sup>3</sup>/ : 11.3...11.5

---

100 s: (11.1...11.7)

---

Spread cm<sup>3</sup> : 0.3

---

100 s: (0.6)

---

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del. quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 750  
Del. quantity : 113.0...115.0  
1000 : (111.0...117.0)

Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 40...48

Testing:  
1st rack travel in: 10.90  
Speed rpm : 790...800

2nd rack travel in: 4.00  
Speed rpm : 825...855

3rd rack travel in: 4.00  
Speed rpm : 835...865

4th rack travel in: 1000

Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever

position degrees: 19...27

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 330...390

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 750

Rack travel in m: 11.90...12.00

2nd speed rpm : 450

Rack travel in m: 11.90...12.00

3rd speed rpm : 290

Rack travel in m: 13.20...13.80

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90

Speed rpm : 790...800

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 260.0...280.0

1000 s: (256.0...284.0)

Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Remarks:

:

#### APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 f1  
Edition : 24.02.89  
Replaces : 7.10.88  
Test oil : ISO-4113  
  
Combination no. : 0 401 876 332A  
  
Injection pump  
Pump designation : PE6P100A820LS130  
EP type number : 0 411 806 179  
Governor  
Governor design. : RSV250...1000P1A532  
Governor no. : 0 421 833 273

Customer-spec. information  
Customer : ENASA

Engine : 95 A1 COMR 400

1st version kW : 125.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00

B03

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.40...11.50

Del.quantity cm<sup>3</sup>/ : 11.0...11.2

100 s: (10.8...11.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 110.0...112.0

1000 : (108.0...114.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 10.40

Speed rpm : 1060...1065

2nd rack travel in: 4.00

Speed rpm : 1090...1120

3rd rack travel in: 4.00  
Speed rpm : 1100...1130  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 200  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 200  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 310...370

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.40...11.50  
2nd speed rpm : 450  
Rack travel in m: 11.40...11.50  
3rd speed rpm : 250  
Rack travel in m: 12.60...13.20

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.40  
Speed rpm : 1060...1065

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 200  
Rack travel in mm : 5.90...6.10

Remarks:

:



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10,1 f2  
 Edition : 24.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 332B  
 Injection pump  
 Pump designation : PE6P100A820LS130  
 EP type number : 0 411 806 179  
 Governor  
 Governor design. : RSV250...1000P1A532  
 Govenner no. : 0 421 833 273

Customer-spec. information  
 Customer : ENASA

Engine : 95 A1 COML 4

1st version kW : 114.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

B05

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.00...11.10

Del.quantity cm<sup>3</sup>/ : 10.0...10.2

100 s: (9.8...10.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 100.0...102.0

1000 : (98.0...104.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 49...57

Testing:

1st rack travel in: 10.00

Speed rpm : 1010...1015

2nd rack travel in: 4.00

Speed rpm : 1040...1070

3rd rack travel in: 4.00  
Speed rpm : 1050...1080  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 200  
Rack travel in mm : 5.5

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 200  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 310...370

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 450  
Rack travel in m: 11.00...11.10  
3rd speed rpm : 250  
Rack travel in m: 12.20...12.80

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.00  
Speed rpm : 1010...1015

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 200  
Rack travel in mm : 5.90...6.10

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 f3  
Edition : 24.02.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 876 332C  
  
Injection pump  
Pump designation : PE6P100A820LS130  
EP type number : 0 411 806 179  
Governor  
Governor design. : RSV250...1000P1A532  
Governor no. : 0 421 833 273

Customer-spec. information  
Customer : ENASA

Engine : 95 AI COEB 2

1st version kw : 113.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 11.60...11.70

Del.quantity cm<sup>3</sup>/ : 10.9...11.1

100 s: (10.7...11.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 109.0...111.0

1000 : (107.0...113.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 10.60

Speed rpm : 905...910

2nd rack travel in: 4.00

Speed rpm : 935...965

3rd rack travel in: 4.00  
Speed rpm : 945...975  
4th rack travel in: 1100  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 340...400

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 450  
Rack travel in m: 11.60...11.70  
3rd speed rpm : 290  
Rack travel in m: 12.80...13.40

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.60  
Speed rpm : 905...910

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10,1 f4  
 Edition : 24.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 332D  
 Injection pump  
 Pump designation : PE6P100A820LS130  
 EP type number : 0 411 806 179  
 Governor  
 Governor design. : RSV250...1000P1A532  
 Governer no. : 0 421 833 273

Customer-spec. information  
 Customer : ENASA

Engine : 95 A1 COEB 1

1st version kW : 97.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 10.7...10.9

100 s: (10.5...11.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 107.0...109.0

1000 : (105.0...111.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 38...46

Testing:

1st rack travel in: 10.60

Speed rpm : 755...760

2nd rack travel in: 4.00

Speed rpm : 780...810

3rd rack travel in: 4.00  
Speed rpm : 790...820  
4th rack travel in: 1000  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 330...390

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 450  
Rack travel in m: 11.60...11.70  
3rd speed rpm : 300  
Rack travel in m: 12.80...13.40

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.60  
Speed rpm : 755...760

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 f5  
 Edition : 24.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 332E  
 Injection pump  
 Pump designation : PE6P100A820LS130  
 EP type number : 0 411 806 179  
 Governor  
 Governor design. : RSV250...1000P1A532  
 Govenner no. : 0 421 833 273

Customer-spec. information  
 Customer : ENASA

Engine : 95 T1 AOML 4

1st version kW : 158.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

B11

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 14.10...14.20

Del.quantity cm<sup>3</sup>/ : 16.2...16.4

100 s : (16.0...16.6)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm<sup>3</sup>/ : 1.8...2.2

100 s : (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Del.quantity : 162.0...164.0

1000 : (160.0...166.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 47...55

Testing:

1st rack travel in: 13.10

Speed rpm : 960...965

2nd rack travel in: 4.00

Speed rpm : 1000...1030

3rd rack travel in: 4.00  
Speed rpm : 1010...1040  
4th rack travel in: 1200  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 200  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 200  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 320...380

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 14.10...14.20  
2nd speed rpm : 450  
Rack travel in m: 14.10...14.20  
3rd speed rpm : 250  
Rack travel in m: 15.30...15.90

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.10  
Speed rpm : 960...965

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 200  
Rack travel in mm : 5.90...6.10

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 f6  
Edition : 24.02.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 876 332F  
  
Injection pump  
Pump designation : PE6P100A820LS130  
EP type number : 0 411 806 179  
Governor  
Governor design. : RSV250...1000P1A532  
Governor no. : 0 421 833 273

Customer-spec. information  
Customer : ENASA

Engine : 95 T1 AOE A 2

1st version kW : 147.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 14.20...14.30

Del. quantity cm<sup>3</sup>/ : 16.3...16.5

100 s: (16.1...16.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del. quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del. quantity : 163.0...165.0

1000 : (161.0...167.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 45...53

Testing:

1st rack travel in: 13.20

Speed rpm : 905...910

2nd rack travel in: 4.00

Speed rpm : 935...965

3rd rack travel in: 4.00  
Speed rpm : 945...975  
4th rack travel in: 1150  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 340...400

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 14.20...14.30  
2nd speed rpm : 450  
Rack travel in m: 14.20...14.30  
3rd speed rpm : 290  
Rack travel in m: 15.40...16.00

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.20  
Speed rpm : 905...910

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 f7  
Edition : 24.02.89  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 401 876 332G

Injection pump  
Pump designation : PE6P100A820LS130  
EP type number : 0 411 806 179  
Governor  
Governor design. : RSV250...1000P1A532  
Governor no. : 0 421 833 273

Customer-spec. information  
Customer : ENASA

Engine : 95 T1 A0EB 1

1st version kW : 146.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
(2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.40...14.50

Del.quantity cm<sup>3</sup>/ : 16.7...16.9

100 s: (16.5...17.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 167.0...169.0

1000 : (165.0...171.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 13.40

Speed rpm : 755...760

2nd rack travel in: 4.00

Speed rpm : 780...810

3rd rack travel in: 4.00  
Speed rpm : 790...820  
4th rack travel in: 1000  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 330...390

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 14.40...14.50  
2nd speed rpm : 450  
Rack travel in m: 14.40...14.50  
3rd speed rpm : 300  
Rack travel in m: 15.60...16.20

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.40  
Speed rpm : 755...760

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10,1 f8  
 Edition : 24.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 332H  
 Injection pump  
 Pump designation : PE6P100A820LS130  
 EP type number : 0 411 806 179  
 Governor  
 Governor design. : RSV250...1000P1A532  
 Governor no. : 0 421 833 273

Customer-spec. information  
 Customer : ENASA

Engine : 95 A1 COIB 4

1st version kW : 120.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.80...11.90

Del.quantity cm3/ : 11.5...11.7

100 s: (11.3...11.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 115.0...117.0

1000 : (113.0...119.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 49...57

Testing:

1st rack travel in: 10.80

Speed rpm : 1010...1015

2nd rack travel in: 4.00

Speed rpm : 1040...1070

3rd rack travel in: 4.00  
Speed rpm : 1050...1080  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 200  
Rack travel in mm : 5.5

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 200  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 310...370

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 450  
Rack travel in m: 11.80...11.90  
3rd speed rpm : 250  
Rack travel in m: 13.00...13.60

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.80  
Speed rpm : 1010...1015

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 200  
Rack travel in mm : 5.90...6.10

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 f9  
 Edition : 24.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 332K  
 Injection pump  
 Pump designation : PE6P100A820LS130  
 EP type number : 0 411 806 179  
 Governor  
 Governor design. : RSV250...1000P1A532  
 Govenner no. : 0 421 833 273

Customer-spec. information  
 Customer : ENASA

Engine : 95 T1 A0IB 4

1st version kW : 165.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 14.20...14.30

Del.quantity cm<sup>3</sup>/ : 16.3...16.5

100 s: (16.1...16.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3°

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Del.quantity : 163.0...165.0

1000 : (161.0...167.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 47...55

Testing:

1st rack travel in: 13.20

Speed rpm : 960...965

2nd rack travel in: 4.00

Speed rpm : 1000...1030

3rd rack travel in: 4.00  
Speed rpm : 1010...1040  
4th rack travel in: 1200  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 200  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 200  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 320...380

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 14.20...14.30  
2nd speed rpm : 450  
Rack travel in m: 14.20...14.30  
3rd speed rpm : 250  
Rack travel in m: 15.40...16.00

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.20  
Speed rpm : 960...965

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 200  
Rack travel in mm : 5.90...6.10

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1f10  
Edition : 24.02.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 876 332L  
  
Injection pump  
Pump designation : PE6P100A820LS130  
EP type number : 0 411 806 179  
Governor  
Governor design. : RSV250...1000P1A532  
Governor no. : 0 421 833 273

## Customer-spec. information

Customer : ENASA  
  
Engine : 95 T1 A0IR 43

1st version kW : 166.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42  
  
Overflow valve : 1 417 413 025  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 0 681 343 009  
  
Opening  
pressure, bar : 172...175  
  
Test lines : 1 680 750 015  
  
Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
  
Prestroke mm : 2.80...2.90  
                  : (2.75...2.95)  
Rack travel in mm : 9.00...12.00

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Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000  

---

Rack travel in mm : 14.10...14.20  

---

Del. quantity cm<sup>3</sup>/ : 16.3...16.5  
100 s : (16.1...16.7)  

---

Spread cm<sup>3</sup> : 0.3  
100 s : (0.6)

2nd speed rpm : 250.0  
Rack travel in mm : 7.9...8.1  
Del. quantity cm<sup>3</sup>/ : 1.8...2.2  
100 s : (1.5...2.4)  
Spread cm<sup>3</sup> : 0.3  
100 s : (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Del. quantity : 163.0...165.0  
1000 : (161.0...167.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 49...57

Testing:  
1st rack travel in: 13.10  
Speed rpm : 1010...1015  
2nd rack travel in: 4.00  
Speed rpm : 1045...1075

3rd rack travel in: 4.00  
Speed rpm : 1055...1085  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 200  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 200  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 310...370

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 14.10...14.20  
2nd speed rpm : 450  
Rack travel in m: 14.10...14.20  
3rd speed rpm : 250  
Rack travel in m: 15.30...15.90

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.10  
Speed rpm : 1010...1015

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 200  
Rack travel in mm : 5.90...6.10

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10,1f11  
 Edition : 24.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 332M  
 Injection pump  
 Pump designation : PE6P100A820LS130  
 EP type number : 0 411 806 179  
 Governor  
 Governor design. : RSV250...1000P1A532  
 Govenrer no. : 0 421 833 273

Customer-spec. information  
 Customer : ENASA

Engine : 9105.42.25.43

1st version kW : 132.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 11.70...11.80

Del.quantity cm<sup>3</sup>/ : 11.1...11.3

100 s: (10.9...11.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 111.0...113.0

1000 : (109.0...115.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 47...55

Testing:

1st rack travel in: 10.70

Speed rpm : 965...975

2nd rack travel in: 4.00

Speed rpm : 1000...1030

3rd rack travel in: 4.00  
Speed rpm : 1010...1040  
4th rack travel in: 1200  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 200  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 200  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 320...380

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 11.70...11.80  
2nd speed rpm : 450  
Rack travel in m: 11.70...11.80  
3rd speed rpm : 250  
Rack travel in m: 12.90...13.50

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 965...975

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 200  
Rack travel in mm : 5.90...6.10

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1f12  
Edition : 24.02.89  
Replaces : —  
Test oil : ISO-4113  
  
Combination no. : 0 401 876 332N  
  
Injection pump  
Pump designation : PE6P100A820LS130  
EP type number : 0 411 806 179  
Governor  
Governor design. : RSV250...1000P1A532  
Governor no. : 0 421 833 273

Customer-spec. information  
Customer : ENASA

Engine : 9100.14.25.32

1st version kW : 125.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00

B25

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.60...11.70

Del. quantity cm<sup>3</sup>/ : 11.0...11.2

100 s : (10.8...11.4)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del. quantity cm<sup>3</sup>/ : 1.8...2.2

100 s : (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del. quantity : 110.0...112.0

1000 : (108.0...114.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 49...57

Testing:

1st rack travel in: 10.60

Speed rpm : 1010...1020

2nd rack travel in: 4.00

Speed rpm : 1045...1055

3rd rack travel in: 4.00  
Speed rpm : 1055...1085  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 340...400

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 450  
Rack travel in m: 11.60...11.70  
3rd speed rpm : 250  
Rack travel in m: 12.80...13.40

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.60  
Speed rpm : 1010...1020

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1f13  
 Edition : 24.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 332R  
 Injection pump  
 Pump designation : PE6P100A820LS130  
 EP type number : 0 411 806 179  
 Governor  
 Governor design. : RSV250...1000P1A532  
 Governor no. : 0 421 833 273

Customer-spec. information  
 Customer : ENASA

Engine : 9100.04

1st version kw : 107.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 11.40...11.50

Del. quantity cm<sup>3</sup>/ : 10.4...10.6

100 s: (10.2...10.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del. quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del. quantity : 104.0...106.0

1000 : (102.0...108.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 10.40

Speed rpm : 915...925

2nd rack travel in: 4.00

Speed rpm : 950...960

3rd rack travel in: 4.00  
Speed rpm : 960...990  
4th rack travel in: 1150  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 340...400

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 11.40...11.50  
2nd speed rpm : 450  
Rack travel in m: 11.40...11.50  
3rd speed rpm : 250  
Rack travel in m: 12.60...13.20

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.40  
Speed rpm : 915...925

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1f14  
Edition : 24.02.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 876 332S  
  
Injection pump  
Pump designation : PE6P100A820LS130  
EP type number : 0 411 806 179  
Governor  
Governor design. : RSV250...1000P1A532  
Governor no. : 0 421 833 273

Customer-spec. information  
Customer : ENASA

Engine : 9105.05

1st version kw : 86.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
                  : (2.75...2.95)  
Rack travel in mm : 9.00...12.00

C01

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.10...12.20

Del.quantity cm<sup>3</sup>/ : 11.6...11.8

100 s: (11.4...12.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 116.0...118.0

1000 : (114.0...120.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 38...46

Testing:

1st rack travel in: 11.10

Speed rpm : 760...770

2nd rack travel in: 4.00

Speed rpm : 775...805

3rd rack travel in: 4.00  
Speed rpm : 785...815  
4th rack travel in: 1000  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 330...390

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 12.10...12.20  
2nd speed rpm : 450  
Rack travel in m: 12.10...12.20  
3rd speed rpm : 290  
Rack travel in m: 13.30...13.90

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.10  
Speed rpm : 760...770

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:  
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10,1f15  
 Edition : 24.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 332T  
 Injection pump  
 Pump designation : PE6P100A820LS130  
 EP type number : 0 411 806 179  
 Governor  
 Governor design. : RSV250...1000P1A532  
 Governor no. : 0 421 833 273

Customer-spec. information  
 Customer : ENASA

Engine : 9109.04

1st version kW : 140.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

C03

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.20...13.30

Del.quantity cm<sup>3</sup>/ : 14.2...14.4

100 s: (14.0...14.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 142.5...144.5

1000 : (140.5...146.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 12.00

Speed rpm : 915...925

2nd rack travel in: 4.00

Speed rpm : 945...975

3rd rack travel in: 4.00  
Speed rpm : 955...985  
4th rack travel in: 1150  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 250  
Rack travel in mm : 9.40...6.10  
Rack travel in mm : 2.00  
Speed rpm : 340...400

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 13.20...13.30  
2nd speed rpm : 450  
Rack travel in m: 13.20...13.30  
3rd speed rpm : 250  
Rack travel in m: 14.40...15.00

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.00  
Speed rpm : 915...925

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 11,9 g1  
 Edition : 17.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 333A  
 Injection pump  
 Pump designation : PE6P120A32ORS257  
 EP type number : 0 411 826 075  
 Governor  
 Governor design. : RSV250...1100POA533  
 Governor no. : 0 421 833 274

Customer-spec. information

Customer : ENASA  
 Engine : 96 T1A0

1st version kW : 240.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.80...11.90

Del. quantity cm<sup>3</sup>/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.7...5.9

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 10.80

Speed rpm : 1115...1120  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
3rd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 350...410

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 450  
Rack travel in m: 11.80...11.90  
3rd speed rpm : 250  
Rack travel in m: 13.00...13.60

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.80  
Speed rpm : 1115...1120

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

#### APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 11,9 g2  
Edition : 17.02.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 876 333B  
  
Injection pump  
Pump designation : PE6P120A320RS257  
EP type number : 0 411 826 075  
Governor  
Governor design. : RSV250...1100POA533  
Governor no. : 0 421 833 274

## Customer-spec. information

Customer : ENASA  
  
Engine : 96 T1A0

1st version kW : 228.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42  
  
Overflow valve : 1 417 413 025  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 1 688 901 019  
  
Opening  
pressure, bar : 207...210  
  
Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067  
  
Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
                  : (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.60...11.70

Del. quantity cm<sup>3</sup>/ : 22.3...22.5

100 s : (22.0...22.8)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.7...5.9

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s : (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 223.0...225.0

1000 : (220.0...228.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 10.60

Speed rpm : 1110...1115  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
3rd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 350...410

#### TORQUE CONTROL

Dimension a mm : 2.30  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 450  
Rack travel in m: 11.60...11.70  
3rd speed rpm : 250  
Rack travel in m: 12.80...13.40

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.60  
Speed rpm : 1110...1115

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

#### APPLICATION

Special-purpose vehicle



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 11,9 g3  
Edition : 17.02.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 876 333C  
Injection pump  
Pump designation : PE6P120A320RS257  
EP type number : 0 411 826 075  
Governor  
Governor design. : RSV250...1100POA533  
Governor no. : 0 421 833 274

## Customer-spec. information

Customer : ENASA  
Engine : 96 T1A0

1st version kW : 209.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

C09

Prestroke mm : 2.80...2.90  
                  : (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 23.7...23.9

100 s : (23.4...24.2)

Spread cm3 : 0.5

100 s : (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.7...5.9

Del.quantity cm3/ : 1.7...2.3

100 s : (1.4...2.6)

Spread cm3 : 0.8

100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 237.0...239.0

1000 : (234.0...242.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing:  
1st rack travel in: 11.20

Speed rpm : 905...910  
2nd rack travel in: 4.00  
Speed rpm : 960...990  
3rd rack travel in: 4.00  
Speed rpm : 970...1000  
4th rack travel in: 1150  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control Lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 350...410

#### TORQUE CONTROL

Dimension a mm : 2.30  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 450  
Rack travel in m: 12.20...12.30  
3rd speed rpm : 290  
Rack travel in m: 13.40...14.00

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 905...910

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

#### APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 11,9 g4  
 Edition : 17.02.89  
 Replaces : -  
 Test oil : ISO-4113  
  
 Combination no. : 0 401 876 333D  
  
 Injection pump  
 Pump designation : PE6P120A32ORS257  
 EP type number : 0 411 826 075  
 Governor  
 Governor design. : RSV250...1100POA533  
 Govenner no. : 0 421 833 274 .

## Customer-spec. information

Customer : ENASA  
  
 Engine : 96 T1A0

1st version kW : 195.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 23.7...23.9

100 s: (23.4...24.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.7...5.9

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 237.0...239.0

1000 : (234.0...242.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 32...40

Testing:

1st rack travel in: 11.50

Speed rpm : 755...760  
2nd rack travel in: 4.00  
Speed rpm : 820...850  
3rd rack travel in: 4.00  
Speed rpm : 830...860  
4th rack travel in: 1000  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control Lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 350...410

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 12.50...12.60  
2nd speed rpm : 450  
Rack travel in m: 12.50...12.60  
3rd speed rpm : 300  
Rack travel in m: 13.70...14.30

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.50  
Speed rpm : 755...760

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

#### APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 11,9 g5  
 Edition : 17.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 333E  
 Injection pump  
 Pump designation : PE6P120A32ORS257  
 EP type number : 0 411 826 075  
 Governor  
 Governor design. : RSV250...1100POA533  
 Governor no. : 0 421 833 274

Customer-spec. information  
 Customer : ENASA

Engine : 96 T1A0

1st version kw : 220.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

C13

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.70...11.80

Del.quantity cm<sup>3</sup>/ : 22.3...22.5

100 s: (22.0...22.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.7...5.9

Del.quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 223.0...225.0

1000 : (220.0...228.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 37...45

Testing:

1st rack travel in: 10.70

Speed rpm : 1010...1015  
2nd rack travel in: 4.00  
Speed rpm : 1050...1080  
3rd rack travel in: 4.00  
Speed rpm : 1060...1090  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 350...410

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.70...11.80  
2nd speed rpm : 450  
Rack travel in m: 11.70...11.80  
3rd speed rpm : 250  
Rack travel in m: 12.90...13.50

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1010...1015

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 11,9 g6  
Edition : 17.02.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 876 333F  
Injection pump  
Pump designation : PE6P120A320RS257  
EP type number : 0 411 826 075  
Governor  
Governor design. : RSV250...110GPOA533  
Governor no. : 0 421 833 274

Customer-spec. information  
Customer : ENASA

Engine : 96 T1A0

1st version kW : 221.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.20...11.30

Del. quantity cm<sup>3</sup>/ : 21.2...21.4

100 s: (20.9...21.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.7...5.9

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del. quantity : 212.0...214.0

1000 : (209.0...217.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 37...45

Testing:

1st rack travel in: 10.20

Speed rpm : 1010...1020  
2nd rack travel in: 4.00  
Speed rpm : 1050...1060  
3rd rack travel in: 4.00  
Speed rpm : 1060...1090  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 350...410

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.20...11.30  
2nd speed rpm : 450  
Rack travel in m: 11.20...11.30  
3rd speed rpm : 250  
Rack travel in m: 12.40...13.00

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.20  
Speed rpm : 1010...1020

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

#### APPLICATION

Special-purpose vehicle



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 f1  
 Edition : 07.07.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 876 338

Injection pump  
 Pump designation : PE6P120A320RS415-1  
 EP type number : 0 411 826 123  
 Governor  
 Governor design. : RSV250...1100P5A508-  
 9  
 Governor no. : 0 421 833 321

Customer-spec. information  
 Customer : DAF

Engine : KS 238

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 650

---

Rack travel in mm : 11.70...11.80

---

Del. quantity cm<sup>3</sup>/ : 18.5...18.7  
 100 s: (18.2...19.0)

---

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

---

2nd speed rpm : 250.0  
 Rack travel in mm : 6.9...7.1  
 Del. quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s: (1.4...2.6)

---

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 650  
 Aneroid pressure h: 700  
 Del. quantity : 185.0...187.0  
 1000 : (182.0...190.0)

---

Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version  
 Control Lever  
 position degrees: 49...57

Testing:  
 1st rack travel in: 9.70  
 Speed rpm : 1130...1140  
 2nd rack travel in: 4.00  
 Speed rpm : 1185...1215  
 3rd rack travel in: 4.00  
 Speed rpm : 1230...1260  
 4th rack travel in: 1400

Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever

position degrees: 20...28

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.0

Speed rpm : 250

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm : 630...730

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1090

Rack travel in m: 10.70...10.90

2nd speed rpm : 650

Rack travel in m: 12.00...12.10

3rd speed rpm : 775

Rack travel in m: 11.60...11.80

4th speed rpm : 840

Rack travel in m: 11.10...11.30

Aneroid/Altitude

Compensator Test

#### 1st version

Setting

Speed rpm : 600

Pressure hPa : 700

Rack travel mm : 11.70...11.80

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 10.30...10.50

2nd pressure hPa : 300

Rack travel in m: 11.30...11.40

3rd pressure hPa : 255

Rack travel in m: 10.80...11.10

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700

Speed rpm : 1090

Del.quantity cm3/ : 170.0...174.0

1000 s: (167.0...177.0)

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm3/ : 140.0...142.0

1000 s: (137.0...145.0)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70

Speed rpm : 1130...1140

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 305.0...345.0

1000 s: (301.0...349.0)

Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250

Rack travel in mm : 6.40...6.60

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 12,2 b  
 Edition : 31.03.89  
 Replaces : 9.12.88  
 Test oil : ISO-4113

Combination no. : 0 401 876 761

Injection pump  
 Pump designation : PE6P120A32ORS3206  
 EP type number : 0 411 826 773  
 Governor  
 Governor design. : RSV250...900P4A374-6  
 Governor no. : 0 421 833 283

Customer-spec. information  
 Customer : VOLVO-PENTA

Engine : TAMD122 A

1st version kW : 280.0  
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.70...11.80

Del.quantity cm<sup>3</sup>/ : 27.5...27.7

100 s: (27.2...28.0)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.0...5.2

Del.quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 275.5...277.5

1000 : (272.5...280.5)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 10.70

Speed rpm : 925...935

2nd rack travel in: 4.00

Speed rpm : 985...1015  
3rd rack travel in: 4.00  
Speed rpm : 995...1025  
4th rack travel in: 1130  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control Lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 4.6  
Speed rpm : 250  
Rack travel in mm : 5.00...5.20  
Rack travel in mm : 2.00  
Speed rpm : 380...440

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 700  
Pressure hPa : 900  
Rack travel mm : 11.70...11.80

#### Measurement

Speed 1/min : 700

1st pressure hPa : -  
Rack travel in m: 8.60...8.80  
2nd pressure hPa : 240  
Rack travel in m: 8.90...9.00  
3rd pressure hPa : 770  
Rack travel in m: 11.30...11.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 177.0...179.0  
1000 s: (174.0...182.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 925...935

#### STARTING FUEL DELIVERY

Speed rpm : 100

C20

Del.quantity cm<sup>3</sup>/ : 260.0...280.0  
1000 s: (250.0...290.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.00...5.20  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

#### Remarks:

:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PEN 12,2 b1  
 Edition : 11.11.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 761A  
 Injection pump  
 Pump designation : PE6P120A320RS3206  
 EP type number : 0 411 826 773  
 Governor  
 Governor design. : RSV250...900P4A374-6  
 Governor no. : 0 421 833 283

Customer-spec. information  
 Customer : VOLVO-PENTA

Engine : TAMD122 A

1st version kW : 280.0  
 Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.10...12.20

Del. quantity cm<sup>3</sup>/ : 29.0...29.2

100 s : (28.7...29.5)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.0...5.2

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s : (1.4...2.6)

Spread cm<sup>3</sup> : 0.5

100 s : (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del. quantity : 290.5...292.5

1000 : (287.5...295.5)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 54...62

Testing:

1st rack travel in: 11.10

Speed rpm : 1020...1030

2nd rack travel in: 4.00

Speed rpm : 1080...1110  
3rd rack travel in: 4.00  
Speed rpm : 1090...1120  
4th rack travel in: 1160  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control Lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 4.6  
Speed rpm : 250  
Rack travel in mm : 4.50...4.70  
Rack travel in mm : 2.00  
Speed rpm : 380...440

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 700  
Pressure hPa : 1200  
Rack travel mm : 12.10...12.20

#### Measurement

Speed 1/min : 700

1st pressure hPa : -  
Rack travel in m: 8.60...8.80  
2nd pressure hPa : 360  
Rack travel in m: 8.90...9.00  
3rd pressure hPa : 1030  
Rack travel in m: 11.70...12.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 177.0...179.0  
1000 s: (174.0...182.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 11.10  
Speed rpm : 1020...1030

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 290.0...310.0  
1000 s: (280.0...320.0)

#### Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PEN 7,1 c 2  
Edition : 07.02.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 876 768  
  
Injection pump  
Pump designation : PE6P110A32ORS3147  
EP type number : 0 411 816 743  
Governor  
Governor design. : RSV650...750P4A421-6  
Governor no. : 0 421 833 309

Customer-spec. information  
Customer : VOLVO-PENTA

Engine : TID 71AG

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
                  : (3.45...3.65)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.50...11.60

Del. quantity cm<sup>3</sup>/ : 16.4...16.6

100 s: (16.1...16.9)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 650.0

Rack travel in mm : 4.0...4.2

Del. quantity cm<sup>3</sup>/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del. quantity : 164.0...166.0

1000 : (161.0...169.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 37...45

Testing:

1st rack travel in: 10.50

Speed rpm : 747...752

2nd rack travel in: 4.00

Speed rpm : 777...790

4th rack travel in: 930

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 31...39

Setting point w/out bumper spring

Speed rpm : 650

Rack travel in mm : 4.1

Speed rpm : 650

Rack travel in mm : 4.00...4.20

Rack travel in mm : 2.00

Speed rpm : 630...690

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50

Speed rpm : 747...752

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 150.0...180.0

1000 s: (146.0...184.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 650

Rack travel in mm : 4.00...4.20

Del.quantity cm3/ : 17.0...21.0

1000 s: (14.5...23.5)

Spread cm3 : 3.00

1000 s: (6.00)

Remarks:

:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 12,2 c  
Edition : 09.06.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 876 769  
Injection pump  
Pump designation : PE6P120A32ORS3206-2  
EP type number : 0 411 826 784  
Governor  
Governor design. : RSV250..1300POA374-8  
Governor no. : 0 421 833 320

Customer-spec. information  
Customer : VOLVO-TRUCK

Engine : TAMD71A PD

1st version kW : 280.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
                  : (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.70...10.80

Del. quantity cm<sup>3</sup>/ : 23.5...23.7

100 s: (23.2...24.0)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.0...5.2

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.40

Governor spring pre-tension

Click setting x : 2.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del. quantity : 235.5...237.5

1000 : (232.5...240.5)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 48...56

Testing:

1st rack travel in: 9.70  
Speed rpm : 1295...1305  
2nd rack travel in: 4.00  
Speed rpm : 1375...1405  
3rd rack travel in: 4.00  
Speed rpm : 1385...1415  
4th rack travel in: 1500  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 4.6  
Speed rpm : 250  
Rack travel in mm : 5.00...5.20  
Rack travel in mm : 2.00  
Speed rpm : 390...450

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 700  
Pressure hPa : 1200  
Rack travel mm : 10.70...10.80

Measurement  
Speed 1/min : 700

1st pressure hPa : -  
Rack travel in m: 7.40...7.60  
2nd pressure hPa : 960  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : 400  
Rack travel in m: 7.80...8.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 139.0...141.0  
1000 s: (136.0...144.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.70  
Speed rpm : 1295...1305

#### STARTING FUEL DELIVERY

Speed rpm : 100

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.00...5.20  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm



Testing:

1st rack travel in: 12.90  
Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 780...793  
4th rack travel in: 1000  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.1

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 350  
Rack travel in mm : 7.00...7.20

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

:

Observe VDT-I-420/120

APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,6 p 5  
 Edition : 24.05.89  
 Replaces : 1.7.88  
 Test oil : ISO-4113  
  
 Combination no. : 0 401 878 711  
  
 Injection pump  
 Pump designation : PE8P120A320LS3816-10  
 EP type number : 0 411 828 715  
 Governor  
 Governor design. : RSV650...1150POA823-5  
 Governor no. : 0 421 833 280

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM422A

1st version kW : 206.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1180

Rack travel in mm : 9.30...9.40

Del.quantity cm<sup>3</sup>/ : 13.3...13.5

100 s: (13.0...13.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 650.0

Rack travel in mm : 3.3...3.6

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1180

Del.quantity : 133.0...135.0

1000 : (130.0...138.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:  
1st rack travel in: 8.30  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1235...1255  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 650  
Rack travel in mm : 3.4  
Speed rpm : 650  
Rack travel in mm : 3.30...3.60  
Rack travel in mm : 2.00  
Speed rpm : 655...695

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1180  
Rack travel in m: 9.30...9.40  
2nd speed rpm : 950  
Rack travel in m: 10.80...11.10  
3rd speed rpm : 1050  
Rack travel in m: 10.40...10.60

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 160.0...164.0  
1000 s: (157.0...167.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 8.30  
Speed rpm : 1210...1220

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

#### LOW IDLE

Speed rpm : 650

D02

Rack travel in mm : 3.30...3.60  
Del.quantity cm<sup>3</sup>/ : 16.0...22.0  
1000 s: (13.0...25.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

When adjusting and checking, adjust speed regulation to 1210...1220 l/min. Afterwards, readjust speed regulation to 1160...1170 l/min.

#### APPLICATION

Forage harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 10,0 a  
 Edition : 07.04.89  
 Replaces : 5.8.88  
 Test oil : ISO-4113  
 Combination no. : 0 402 035 020  
 Injection pump  
 Pump designation : PES5P120A720/3LS512  
 EP type number : 0 412 025 021  
 Governor  
 Governor design. : RQ300/1100PA813-1  
 Governor no. : 0 421 801 405

Customer-spec. information  
 Customer : MAN

Engine : D2865LF

1st version kW : 191.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.70...10.80

Del. quantity cm<sup>3</sup>/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 3.9...4.1

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del. quantity : 209.0...211.0

1000 : (206.0...214.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.10

Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.0

#### Testing:

Speed rpm : 100  
Minimum rack trave: 5.50  
Speed rpm : 300  
Rack travel in mm : 3.90...4.10  
Rack travel in mm : 2.00  
Speed rpm : 320...380

#### TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 750  
Rack travel in m: 11.00...11.20  
3rd speed rpm : 920  
Rack travel in m: 10.60...10.80

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.70...10.80

#### Measurement

Speed 1/min : 500  
1st pressure hPa : -  
Rack travel in m: 7.70...7.90  
2nd pressure hPa : 125  
Rack travel in m: 8.10...8.20  
3rd pressure hPa : 430  
Rack travel in m: 10.20...10.50

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100

Del.quantity cm3/ : 198.0...202.0  
1000 s: (195.0...205.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 200.0...206.0  
1000 s: (197.0...209.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 125.0...127.0  
1000 s: (122.0...130.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.10  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 3.90...4.10  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7881



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a37  
Edition : 24.05.89  
Replaces : 10.2.89  
Test oil : ISO-4113  
Combination no. : 0 402 036 077  
Injection pump  
Pump designation : PES6P120A720/3LS470-  
2  
EP type number : 0 412 026 050  
Governor  
Governor design. : RQ300/1100PA813-6  
Governor no. : 0 421 801 466

## Customer-spec. information

Customer : MAN  
Engine : D2866TUH/001

1st version kW : 213.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

D05

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.40...11.50

Del. quantity cm<sup>3</sup>/ : 20.0...20.2

100 s: (19.7...20.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.1...5.3

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 750

Rack travel in mm : 14.70...16.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del. quantity : 200.0...202.0

1000 : (197.0...205.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 750

Rack travel in mm : 15.5

Testing:

1st rack travel in: 10.40  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.2

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.70  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 390...430

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 1100  
Rack travel in m: 11.70...11.90

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.40...11.50

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.80...9.00  
2nd pressure hPa : 190  
Rack travel in m: 9.10...9.20  
3rd pressure hPa : 350  
Rack travel in m: 10.10...10.50

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 213.0...219.0  
1000 s: (210.0...222.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 119.0...121.0  
1000 s: (116.0...124.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 215.0...235.0  
1000 s: (211.0...239.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Del.quantity cm<sup>3</sup>/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7893

At start of delivery, locating pin  
must latch into slit in pointer.

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a38  
Edition : 09.06.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 036 078  
Injection pump  
Pump designation : PES6P120A720/3LS470-  
2  
EP type number : 0 412 026 050  
Governor  
Governor design. : RQ300/1100PA813-8  
Governor no. : 0 421 801 483

Customer-spec. information  
Customer : MAN

Engine : D2866LF

1st version kW : 213.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

D07

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.40...10.50

Del. quantity cm<sup>3</sup>/ : 18.3...18.5

100 s: (18.0...18.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...4.9

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 14.70...16.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del. quantity : 183.0...185.0

1000 : (180.0...188.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 15.5

Testing:

1st rack travel in: 8.70  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.30  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 340...380

#### TORQUE CONTROL

Dimension a mm : 0.35  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 9.70...9.80  
2nd speed rpm : 750  
Rack travel in m: 10.40...10.50

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.40...10.50

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 85  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 160  
Rack travel in m: 9.80...10.10

#### START CUT-OUT

Speed 1/min : 190 (210)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm3/ : 178.0...182.0  
1000 s: (175.0...185.0)

008

Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 174.0...180.0  
1000 s: (171.0...183.0)  
Aneroid pressure h: 160  
Speed rpm : 500  
Del.quantity cm3/ : 157.0...169.0  
1000 s: (154.0...172.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.70  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7760

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9a39  
 Edition : 02.06.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 079  
 Injection pump  
 Pump designation : PES6P120A720/3LS470-  
 2  
 EP type number : 0 412 026 050  
 Governor  
 Governor design. : RQV300...1100PA876  
 Governor no. : 0 421 813 661

Customer-spec. information  
 Customer : MAN

Engine : D2866LF  
 1st version kW : 213.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 075  
 Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

D09

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300  
 Tolerance + - , : 0.50 (0.75)  
 Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750  
 Rack travel in mm : 10.30...10.40  
 Del. quantity cm<sup>3</sup>/ : 18.3...18.5  
 100 s : (18.0...18.8)  
 Spread cm<sup>3</sup> : 0.5  
 100 s : (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 4.8...5.0  
 Del. quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s : (1.4...2.6)  
 Spread cm<sup>3</sup> : 0.8  
 100 s : (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.70...2.00  
 2nd speed rpm : 850  
 travel mm : 6.00...6.20  
 3rd speed rpm : 1100  
 travel mm : 8.10...8.30

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1130  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 750  
 Aneroid pressure h: 1000  
 Del. quantity : 183.0...185.0  
 1000 : (180.0...188.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 49...57

#### Testing:

1st rack travel in: 8.70  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1205...1235  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 16...24

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.30  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90

#### CONSTANT REGULATION

Speed rpm : 310...410

#### TORQUE CONTROL

Dimension a mm : 0.80  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 10.30...10.40  
2nd speed rpm : 1100  
Rack travel in m: 9.70...9.80  
3rd speed rpm : 850  
Rack travel in m: 10.10...10.20  
4th speed rpm : 975  
Rack travel in m: 9.80...10.00

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.30...10.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 85  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 160

D10

Rack travel in m: 9.80...10.20

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm3/ : 178.0...182.0  
1000 s: (175.0...185.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 174.0...180.0  
1000 s: (171.0...183.0)  
Aneroid pressure h: 160  
Speed rpm : 500  
Del.quantity cm3/ : 157.0...169.0  
1000 s: (154.0...172.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 8.70  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.80...5.00  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 10,0 u  
 Edition : 08.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 045 702  
 Injection pump  
 Pump designation : PES5P110A820LS3218  
 EP type number : 0 412 015 700  
 Governor  
 Governor design. : RQV300..1100PA916-2  
 Governor no. : 0 421 813 750

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM449

1st version kw : 140.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40  
 : (4.25...4.45)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.40...10.50

Del. quantity cm<sup>3</sup>/ : 13.5...13.7

100 s: (13.2...13.9)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 6.8...7.2

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.10...1.40

2nd speed rpm : 450

travel mm : 3.40...3.80

3rd speed rpm : 1150

travel mm : 7.90...8.30

4th speed rpm : 1225

travel mm : 9.10...9.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 135.0...137.0

1000 : (132.5...139.5)

Spread cm<sup>3</sup> : 4.00  
1000 : (8.00)

Remarks:

#### RATED SPEED

1st version  
Control lever  
position degrees: 50...58

Testing:  
1st rack travel in: 9.50  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1195...1220  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 20...28

Testing:  
Speed rpm : 200  
Minimum rack trave: 9.00  
Speed rpm : 300  
Rack travel in mm : 6.80...7.20

CONSTANT REGULATION  
Speed rpm : 300...500

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 110.0...114.0  
1000 s: (107.0...117.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (9.00)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.50  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 10,0 u 1  
 Edition : 08.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 045 703  
 Injection pump  
 Pump designation : PES5P110A820LS3218  
 EP type number : 0 412 015 700  
 Governor  
 Governor design. : RQV300..1100PA916-3  
 Governor no. : 0 421 813 751

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM449

1st version kW : 147.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40  
 : (4.25...4.45)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.20...11.30

Del.quantity cm<sup>3</sup>/ : 14.4...14.6

100 s: (14.1...14.8)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 6.8...7.2

Del.quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.10...1.40

2nd speed rpm : 450

travel mm : 3.40...3.80

3rd speed rpm : 1150

travel mm : 7.90...8.30

4th speed rpm : 1225

travel mm : 9.10...9.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 144.0...146.0

1000 : (141.5...148.5)

Spread cm<sup>3</sup> : 4.00  
1000 : (8.00)

Remarks:

#### RATED SPEED

1st version

Control lever  
position degrees: 50...58  
Rack travel in mm : 16.5

Testing:

1st rack travel in: 10.20  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 20...28

Testing:

Speed rpm : 200  
Minimum rack travel: 9.00  
Speed rpm : 300  
Rack travel in mm : 6.80...7.20

CONSTANT REGULATION

Speed rpm : 300...500

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 121.0...125.0  
1000 s: (118.0...128.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (9.)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 m 1  
 Edition : 11.05.89  
 Replaces : 12.2.88  
 Test oil : ISO-4113

Combination no. : 0 402 046 335

Injection pump  
 Pump designation : PES6P120A320RS515  
 EP type number : 0 412 026 053  
 Governor  
 Governor design. : RQV300...1150PA527-2  
 K  
 Governor no. : 0 421 815 188

Customer-spec. information  
 Customer : RVI

Engine : MIDRO62030C

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.20...10.30

Del.quantity cm<sup>3</sup>/ : 14.3...14.5  
 100 s: (14.0...14.8)

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 600.0  
 Rack travel in mm : 4.6...4.8  
 Del.quantity cm<sup>3</sup>/ : 1.8...2.4  
 100 s: (1.5...2.7)

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.70...2.10  
 2nd speed rpm : 900  
 travel mm : 5.80...6.20  
 3rd speed rpm : 1150  
 travel mm : 7.40...7.60

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1225  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1150  
 Del.quantity : 143.0...145.0  
 1000 : (140.0...148.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 57...65

Testing:  
1st rack travel in: 9.20  
Speed rpm : 1235...1245  
2nd rack travel in: 4.00  
Speed rpm : 1305...1335  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 6...14

Testing:  
Speed rpm : 200  
Minimum rack travel: 6.20  
Speed rpm : 300  
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION  
Speed rpm : 320...440

TORQUE CONTROL  
Dimension a mm : 1.80  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 750  
Rack travel in m: 9.20...9.30  
3rd speed rpm : 500  
Rack travel in m: 8.60...8.80  
4th speed rpm : 350  
Rack travel in m: 8.40...8.80

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 120.0...126.0  
1000 s: (117.0...129.0)  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 64.0...70.0  
1000 s: (61.0...73.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: -1.00  
Speed rpm : 1235...1245

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : -5.40...-5.60  
Del.quantity cm<sup>3</sup>/ : 13.0...19.0  
1000 s: (10.0...22.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

Start-of-delivery mark 6, cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,7 a 3  
 Edition : 14.04.89  
 Replaces : 9.3.87  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 751  
 Injection pump  
 Pump designation : PES6P110A820LS3131  
 EP type number : 0 412 016 715  
 Governor  
 Governor design. : RQ300/1100PA723  
 Governor no. : 0 421 801 265

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM427H

1st version kW : 177.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40  
 : (4.25...4.45)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.10...11.20

Del.quantity cm<sup>3</sup>/ : 14.0...14.2

100 s: (13.7...14.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 7.1...7.3

Del.quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 550

Rack travel in mm : 14.70...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 140.0...142.0

1000 : (137.0...145.0)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.5

Testing:

1st rack travel in: 10.20

Speed rpm : 1140...1150

2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.2

Testing:

Speed rpm : 100  
Minimum rack trave: 8.80  
Speed rpm : 300  
Rack travel in mm : 7.10...7.30  
Rack travel in mm : 2.00  
Speed rpm : 360...400

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 117.0...121.0  
1000 s: (114.0...124.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 d  
 Edition : 23.06.89  
 Replaces : 9.3.87  
 Test oil : ISO-4113  
  
 Combination no. : 0 402 046 769  
  
 Injection pump  
 Pump designation : PES6P120A720LS3167  
 EP type number : 0 412 026 720  
 Governor  
 Governor design. : RQV300...1100PA667-2  
 Governor no. : 0 421 813 524

Customer-spec. information  
 Customer : MAN

Engine : D2866LE

1st version kW : 300.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X3.00X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
 : (3.75...3.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.60...12.70

Del.quantity cm<sup>3</sup>/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.20...1.40

2nd speed rpm : 500

travel mm : 3.30...3.50

3rd speed rpm : 900

travel mm : 5.90...6.20

4th speed rpm : 1100

travel mm : 7.60...7.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 234.0...236.0

1000 : (231.0...239.0)

Spread cm3 : 5.00  
1000 : (9.00)

RATED SPEED

1st version  
Control lever  
position degrees: 49...57

Testing:

1st rack travel in: 11.60  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1245...1275  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 13...21

Testing:

Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed rpm : 330...445

START CUT-OUT

Speed 1/min : 220 (240)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 1140...1150

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...260.0  
1000 s: (236.0...264.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.90...6.10  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)

D20

Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:  
APPLICATION : 2-7656

Ship



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 9,6 u 4  
 Edition : 16.06.89  
 Replaces : 14.4.89  
 Test oil : ISO-4113

Combination no. : 0 402 046 806

Injection pump  
 Pump designation : PES6P110A72ORS3104  
 EP type number : 0 412 016 712  
 Governor  
 Governor design. : RQV300...1150PA850-4  
 Governer no. : 0 421 813 745

Customer-spec. information  
 Customer : KHD

Engine : BF6L513RC

1st version kw : 210.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - , : 0.50 (0.75)  
 Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1150

---

Rack travel in mm : 14.00...14.10

---

Del. quantity cm<sup>3</sup>/ : 16.5...16.7  
 100 s : (16.2...17.0)

---

Spread cm<sup>3</sup> : 0.4  
 100 s : (0.7)

2nd speed rpm : 300.0  
 Rack travel in mm : 7.6...7.8  
 Del. quantity cm<sup>3</sup>/ : 1.2...1.6  
 100 s : (0.9...1.9)

Spread cm<sup>3</sup> : 0.4  
 100 s : (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.00...1.40  
 2nd speed rpm : 450  
 travel mm : 2.60...3.20  
 3rd speed rpm : 650  
 travel mm : 3.30...3.90  
 4th speed rpm : 1195  
 travel mm : 8.30...8.50  
 5th speed rpm : 1330  
 travel mm : 9.70...10.10

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1190  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1150  
 Aneroid pressure h : 900  
 Del. quantity : 165.0...167.0  
 1000 : (162.0...170.0)

Spread cm<sup>3</sup> : 4.00  
 1000 : (7.50)

RATED SPEED

1st version  
Control lever  
position degrees: 52...60

Testing:  
1st rack travel in: 13.00  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1315...1345  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 19...27

Testing:  
Speed rpm : 100  
Minimum rack trave: 9.20  
Speed rpm : 300  
Rack travel in mm : 7.60...7.80

CONSTANT REGULATION

Speed rpm : 300...550

TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 14.00...14.10  
2nd speed rpm : 750  
Rack travel in m: 14.20...14.40  
3rd speed rpm : 850  
Rack travel in m: 14.10...14.30

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 14.20...14.30

Measurement

Speed 1/min : 500  
1st pressure hPa : -  
Rack travel in m: 12.40...12.60  
2nd pressure hPa : 510  
Rack travel in m: 13.70...13.80  
3rd pressure hPa : 375  
Rack travel in m: 12.70...12.90

START CUT-OUT

Speed 1/min : 250 (270)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900  
Speed rpm : 750  
Del.quantity cm3/ : 170.0...174.0  
1000 s: (168.0...176.0)  
Aneroid pressure h: -  
Speed rpm : 450  
Del.quantity cm3/ : 123.0...125.0  
1000 s: (120.0...128.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 13.00  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 170.0...200.0  
1000 s: (166.0...204.0)

Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 6,2 f  
 Edition : 07.07.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 811  
 Injection pump  
 Pump designation : PES6P110A32ORS3233  
 EP type number : 0 412 016 728  
 Governor  
 Governor design. : RQV275...1175PA833-4  
 Govenner no. : 0 421 813 762

Customer-spec. information  
 Customer : RVI

Engine : MIDR 060226D

1st version kW : 166.0  
 Rated speed : 2350

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30  
 : (4.15...4.35)

Rack travel in mm : 18.00...21.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 13.50...13.60

Del.quantity cm<sup>3</sup>/ : 11.6...11.9

100 s: (11.3...12.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 4.8...5.0

Del.quantity cm<sup>3</sup>/ : 2.8...3.3

100 s: (2.5...3.5)

Spread cm<sup>3</sup> : 8.4

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 0.40...0.60

2nd speed rpm : 450  
travel mm : 2.90...3.50

3rd speed rpm : 800  
travel mm : 4.60...5.00

4th speed rpm : 1175  
travel mm : 6.90...7.10

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1330

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

Aneroid pressure h: 1000

Del.quantity : 116.0...119.0

1000 : (113.5...121.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 52...60

Testing:  
1st rack travel in: 12.50  
Speed rpm : 1255...1265  
2nd rack travel in: 4.00  
Speed rpm : 1410...1440  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 14...22

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.20  
Speed rpm : 275  
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION  
Speed rpm : 250...320

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 13.50...13.60

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 400  
Rack travel in m: 12.90...13.00  
3rd pressure hPa : 160  
Rack travel in m: 10.90...11.30

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 111.5...116.5  
1000 s: (108.5...119.5)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 47.5...50.5  
1000 s: (45.0...53.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: -1.00  
Speed rpm : 1255...1265

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 85.0...105.0  
1000 s: (81.0...109.0)

LOW IDLE

Speed rpm : 275  
Rack travel in mm : -8.50...-8.70  
Del.quantity cm<sup>3</sup>/ : 28.0...33.0  
1000 s: (25.5...35.5)  
Spread cm<sup>3</sup> : 84.50

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 15,6 a  
 Edition : 13.7.89  
 Replaces : 2.5.89  
 Test oil : ISO-4113

Combination no. : 0 402 068 700

Injection pump  
 Pump designation : PES8P110A12ORS3044  
 Governor  
 Governor design. : RSV400...1050P2/435D  
 R

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 8955 T

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness : 6,00X1,50X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1-5-6-3-4-2-7-8

Phasing : 0-45-90-135-180-225-

D25

270-315  
 Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.00...10.10

Del. quantity cm<sup>3</sup>/ : 14.7...14.9

100 s : (14.4...15.2)

Spread cm<sup>3</sup> : 0.4

100 s : (0.75)

2nd speed rpm : 400

Rack travel in mm : 5.20...5.40

Del. quantity cm<sup>3</sup>/ : 2.2...2.8

100 s : (-)

Spread cm<sup>3</sup> : 0.4

100 s : (0.75)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 650

Del. quantity : 147.0...149.0

1000 : (144.0...152.0)

Spread cm<sup>3</sup> : 4.0

1000 : (7.5)

## RATED SPEED

1st version

Control lever

position degrees: 39.5...47.5

Testing:

1st rack travel in: 9.00

Speed rpm : 1095...1105

2nd rack travel in: 4.00

Speed rpm : 1155...1185

4th rack travel in: 1275

Speed rpm : 0.30...1.70

## LOW IDLE 1

Control Lever  
position degrees: 17...25

Testing:

Speed rpm : 100  
Minimum rack trave: 16.00  
Speed rpm : 400  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 565...625  
Speed rpm : 800  
Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 10.00...10.10  
2nd speed rpm : 750  
Rack travel in m: 10.90...11.20  
3rd speed rpm : 550  
Rack travel in m: 9.50...9.60

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 550  
Pressure hPa : 380  
Rack travel mm : 10.70...10.80

Measurement

Speed 1/min : 550  
1st pressure hPa : 270  
Rack travel in m: 9.70...10.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 650  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 163.5...166.5  
1000 s: (160.0...170.0)  
Aneroid pressure h: -  
Speed rpm : 550  
Del.quantity cm<sup>3</sup>/ : 130.0...134.0  
1000 s: (127.0...137.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 9.00  
Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 180.0...200.0  
1000 s: (-)  
Rack travel in mm : 19.00...21.00

HIGH IDLE

1st version

Speed rpm : 1155  
Del.quantity cm<sup>3</sup>/ : 37.0...47.0  
1000 s: (-)

Remarks:

Start-of-delivery mark 16, cam angle  
after start of delivery cyl. 8

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 10,0 m1  
 Edition : 14.04.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 075 701

Injection pump  
 Pump designation : PES5P110A720LS3221  
 EP type number : 0 412 015 701  
 Governor  
 Governor design. : RSV350...1100POA487-  
 8

Governer no. : 0 421 833 315

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM449

1st version kW : 147.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

D27

Prestroke mm : 4.30...4.40  
 : (4.25...4.45)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 14.4...14.4  
 100 s: (14.1...14.6)

Spread cm3 : 0.4  
 100 s: (0.8)

2nd speed rpm : 350.0  
 Rack travel in mm : 6.3...6.7  
 Del.quantity cm3/ : 1.2...1.8  
 100 s: (0.9...2.0)  
 Spread cm3 : 0.4  
 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1080  
 Del.quantity : 144.0...144.0  
 1000 : (141.5...146.5)  
 Spread cm3 : 4.00  
 1000 : (8.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 40...48

Testing:  
 1st rack travel in: 10.50  
 Speed rpm : 1130...1140  
 2nd rack travel in: 4.00

Speed rpm : 1190...1220  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever

position degrees: 16...24

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 6.5

Speed rpm : 350

Rack travel in mm : 6.30...6.70

Rack travel in mm : 2.00

Speed rpm : 470...530

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 124.0...128.0

1000 s: (121.0...131.0)

Spread cm<sup>3</sup> : 6.00

1000 s: (9.00)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50

Speed rpm : 1130...1140

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 140.0...160.0

1000 s: (136.0...164.0)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,7 d 4  
Edition : 29.03.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 076 734  
  
Injection pump  
Pump designation : PES6P110A820LS3131-1  
EP type number : 0 412 016 717  
Governor  
Governor design. : RSV350..1100POA487-9  
Governor no. : 0 421 833 316

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM447

1st version kW : 168.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

E01

Prestroke mm : 4.30...4.40  
                  : (4.25...4.45)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 13.5...13.7

100 s: (13.2...13.9)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 6.8...7.1

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1080

Del.quantity : 135.0...137.0

1000 : (132.5...139.5)

Spread cm3 : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Control lever

position degrees: 45...53

Testing:

1st rack travel in: 10.00

Speed rpm : 1130...1140  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1350  
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.9

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 350  
Rack travel in mm : 6.80...7.00  
Rack travel in mm : 2.00  
Speed rpm : 400...440

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm3/ : 111.0...115.0  
1000 s: (108.0...118.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 1130...1140

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB 21,9 j  
 Edition : 24.05.89  
 Replaces : 18.9.87  
 Test oil : ISO-4113

Combination no. : 0 402 640 809

Injection pump  
 Pump designation : PE12P120A320LS7813  
 EP type number : 0 412 620 809  
 Governor  
 Governor design. : RQV350...1050PA870  
 Governor no. : 0 421 813 640

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 444 LA

1st version kW : 552.0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 150...170

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 19.00...21.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345  
 Tolerance + - , : 0.50 (0.75)  
 Time to cyl. no. : 12

**BASIC SETTING**

1st speed rpm : 650

---

Rack travel in mm : 14.30...14.50

---

Del.quantity cm<sup>3</sup>/ : 22.4...22.6

---

100 s: (22.1...22.9)

---

Spread cm<sup>3</sup> : 0.5

---

100 s: (0.9)

2nd speed rpm : 350.0  
 Rack travel in mm : 5.2...5.4  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 350  
 travel mm : 1.90...2.10  
 2nd speed rpm : 700  
 travel mm : 4.10...4.50  
 3rd speed rpm : 1100  
 travel mm : 7.60...8.00  
 4th speed rpm : 1200  
 travel mm : 9.50...9.90

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1  
 Speed rpm : 1150  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 650  
Aneroid pressure h: 850  
Del. quantity : 224.0...226.0  
1000 : (221.0...229.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 64...72

Testing:  
1st rack travel in: 14.50  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control Lever  
position degrees: 14...22

Testing:  
Speed rpm : 100  
Minimum rack trave: 7.70  
Speed rpm : 350  
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION  
Speed rpm : 350...600

TORQUE CONTROL  
Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 15.30...15.50  
2nd speed rpm : 1000  
Rack travel in m: 15.60...15.80  
3rd speed rpm : 950  
Rack travel in m: 15.80...16.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 850  
Rack travel mm : 14.30...14.50

Measurement  
Speed 1/min : 600

1st pressure hPa : 350  
Rack travel in m: 10.80...11.00

2nd pressure hPa : 600  
Rack travel in m: 13.40...13.60  
3rd pressure hPa : 1200  
Rack travel in m: 14.60...14.80  
4th pressure hPa : 1400  
Rack travel in m: 15.20...15.40  
5th pressure hPa : 500  
Rack travel in m: 9.00...9.40

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1700  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 256.0...259.0  
1000 s: (253.0...262.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1700  
Speed rpm : 900  
Del. quantity cm<sup>3</sup>/ : 270.0...274.0  
1000 s: (267.0...277.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1700  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 185.0...188.0 \*  
1000 s: (182.0...191.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 139.0...141.0  
1000 s: (136.0...144.0)  
Spread cm<sup>3</sup> : 3.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 14.50  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 260.0...280.0  
1000 s: (256.0...284.0)

Remarks: :

\* = Set at reduced-delivery stop.

6

E05

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 22,0 b  
 Edition : 07.07.89  
 Replaces : 31.3.89  
 Test oil : ISO-4113  
  
 Combination no. : 0 402 640 812  
  
 Injection pump  
 Pump designation : PE12P120A520LS7820  
 EP type number : 0 412 620 814  
 Governor  
 Governor design. : RQV350...1150PA870-4  
 Governor no. : 0 421 813 717

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 444 LA

1st version kW : 736.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 150...170

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

E06

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
 : (4.35...4.55)  
 Rack travel in mm : 19.00...21.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 : 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 : 180-225-240-285-300-  
 : 345

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 14.30...14.40

Del. quantity cm<sup>3</sup>/ : 31.0...31.2

100 s: (30.7...31.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

2nd speed rpm : 350.0

Rack travel in mm : 5.0...6.6

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.90...2.40

2nd speed rpm : 500  
travel mm : 3.00...3.50

3rd speed rpm : 800  
travel mm : 4.30...4.80

4th speed rpm : 1200  
travel mm : 8.30...8.80

5th speed rpm : 1250  
travel mm : 9.30...9.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1275

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150  
Aneroid pressure h: 1800  
Del.quantity : 310.0...312.0  
1000 : (307.0...315.0)  
Spread cm3 : 6.00  
1000 : (10.00)

RATED SPEED

1st version

Control lever  
position degrees: 60...68

Testing:

1st rack travel in: 13.30  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1270...1300  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 10...48

Testing:

Speed rpm : 250  
Minimum rack travel: 7.00  
Speed rpm : 350  
Rack travel in mm : 5.00...5.60

CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 7.60...7.90

Measurement

Speed 1/min : 500  
1st pressure hPa : 300  
Rack travel in m: 9.00...9.10  
2nd pressure hPa : 1100  
Rack travel in m: 13.20...13.50

START CUT-OUT

Speed 1/min : 310 (330)

FUEL DELIVERY CHARACTERISTICS

E07

1st version

Aneroid pressure h: 1800  
Speed rpm : 750  
Del.quantity cm3/ : 301.0...311.0  
1000 s: (298.0...314.0)  
Spread cm3 : 10.00  
1000 s: (15.0)  
Aneroid pressure h: 1800  
Speed rpm : 1150  
Del.quantity cm3/ : 240.0...243.0 \*  
1000 s: (237.0...246.0)  
Spread cm3 : 10.00  
1000 s: (15.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 120.0...122.0  
1000 s: (117.0...125.0)  
Spread cm3 : 10.00  
1000 s: (15.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.30  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 330.0...350.0  
1000 s: (326.0...354.0)

Remarks:

:

\* = Set at reduced-delivery stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 21,0 b  
 Edition : 16.06.89  
 Replaces : -  
 Test oil : ISO-4113  
  
 Combination no. : 0 402 640 815  
  
 Injection pump  
 Pump designation : PE12P120A520LS7824  
 EP type number : 0 412 620 816  
 Governor  
 Governor design. : RQV250...1150PA902-2  
 Governor no. : 0 421 813 760

Customer-spec. information  
 Customer : MAN

Engine : D2842LYE

1st version kW : 735.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60  
 : (4.45...4.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 : 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 : 180-225-240-285-300-

Phasing : 345  
 Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.20...13.30

Del. quantity cm<sup>3</sup>/ : 28.9...29.1

100 s: (28.6...29.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 500

Rack travel in mm : 8.90...9.10

Del. quantity cm<sup>3</sup>/ : 14.9...15.1

100 s: (14.6...15.4)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

3rd speed rpm : 250

Rack travel in mm : 7.30...7.50

Del. quantity cm<sup>3</sup>/ : 5.2...6.0 \*

100 s: (-)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.20...1.40

2nd speed rpm : 450  
travel mm : 3.10...3.70

3rd speed rpm : 750  
travel mm : 5.80...6.20

4th speed rpm : 1150  
travel mm : 9.50...9.70

5th speed rpm : 1400  
travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1

Speed rpm : 1200

Rack travel in mm : 15.20...17.80



FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150  
Aneroid pressure h: 1300  
Del.quantity : 289.0...291.0  
1000 : (286.0...294.0)  
Spread cm3 : 5.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 58...66

Testing:

1st rack travel in: 12.20  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1275...1315  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 16...24

Testing:

Speed rpm : 100  
Minimum rack trave: 8.90  
Speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Rack travel in mm : 2.00  
Speed rpm : 430...490

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1300  
Rack travel mm : 13.20...13.30

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 100  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 470  
Rack travel in m: 11.80...12.20

START CUT-OUT

Speed 1/min : 170 (190)

E09

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 149.0...151.0  
1000 s: (146.0...154.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...120.0 \*  
1000 s: (-)

Speed rpm : 100  
Del.quantity cm3/ : - \*\*  
1000 s: (-)  
Rack travel in mm : 17.50

HIGH IDLE

1st version

Speed rpm : 500\*\*  
Rack travel in mm : <7.00  
Del.quantity cm3/ : <0  
1000 s: (-)

2nd version

Speed rpm : 500\*\*  
Rack travel in mm : <7.50  
Del.quantity cm3/ : <50.0  
1000 s: (-)

3rd version

Speed rpm : 500  
Rack travel in mm : 8.20  
Del.quantity cm3/ : 125.0

LOW IDLE

Speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Del.quantity cm3/ : 52.0...60.0 \*  
1000 s: (-)

Remarks:

: MAN-NR. 2-7960

\* applies to cylinders 4, 5, 6, 8, 10  
and 12

\*\* applies for cylinders 1, 2, 3, 7, 9  
and 11

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 21,0 c  
 Edition : 07.07.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 640 816  
 Injection pump  
 Pump designation : PE12P120A520LS7824  
 EP type number : 0 412 620 816  
 Governor  
 Governor design. : RQV250...1150PA902-3  
 Governor no. : 0 421 813 761

Customer-spec. information  
 Customer : MAN

Engine : D2842LXE

1st version kW : 662.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60  
 : (4.45...4.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 : 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 : 180-225-240-285-300-  
 Phasing : 345  
 Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150  
 Rack travel in mm : 12.00...12.10  
 Del. quantity cm3/ : 24.9...25.1  
 100 s: (24.6...25.4)  
 Spread cm3 : 0.5  
 100 s: (0.9)

2nd speed rpm : 500  
 Rack travel in mm : 8.90...9.10  
 Del. quantity cm3/ : 14.9...15.1  
 100 s: (14.6...15.4)  
 Spread cm3 : 0.8  
 100 s: (1.2)  
 3rd speed rpm : 250  
 Rack travel in mm : 7.30...7.50  
 Del. quantity cm3/ : 5.2...6.0 \*  
 100 s: (-)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 0.90...1.10  
 2nd speed rpm : 450  
 travel mm : 2.90...3.50  
 3rd speed rpm : 750  
 travel mm : 5.50...5.90  
 4th speed rpm : 1150  
 travel mm : 9.20...9.40  
 5th speed rpm : 1400  
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1225  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1150  
Aneroid pressure h: 1300  
Del.quantity : 249.0...251.0  
1000 : (246.0...254.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

### 1st version

Control Lever  
position degrees: 58...66

### Testing:

1st rack travel in: 11.00  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1275...1315  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control Lever  
position degrees: 16...24

### Testing:

Speed rpm : 100  
Minimum rack trave: 8.90  
Speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Rack travel in mm : 2.00  
Speed rpm : 430...490

## Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1300  
Rack travel mm : 13.20...13.30

## Measurement

Speed 1/min : 500  
1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 100  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 400  
Rack travel in m: 11.30...11.70

## START CUT-OUT

Speed 1/min : 170 (190)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 149.0...151.0  
1000 s: (146.0...154.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

## BREAKAWAY

### 1st version

1mm rack travel less than  
full load rack tr: 11.00  
Speed rpm : 1190...1200

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0 \*  
1000 s: (-)

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : - \*\*  
1000 s: (-)  
Rack travel in mm : 17.50

## HIGH IDLE

### 1st version

Speed rpm : 500\*\*  
Rack travel in mm : <7.00...0.00  
Del.quantity cm<sup>3</sup>/ : <0  
1000 s: (-)

### 2nd version

Speed rpm : 500\*\*  
Rack travel in mm : <7.50  
Del.quantity cm<sup>3</sup>/ : <50.0  
1000 s: (-)

### 3rd version

Speed rpm : 500  
Rack travel in mm : 8.20  
Del.quantity cm<sup>3</sup>/ : 125.0  
1000 s: (-)

## LOW IDLE

Speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Del.quantity cm<sup>3</sup>/ : 52.0...60.0 \*  
1000 s: (-)

Remarks:

: MAN-NR. 2-7959

\* applies to cylinders 4, 5, 6, 8, 10  
and 12

\*\* applies for cylinders 1, 2, 3, 7, 9  
and 11

APPLICATION

Ship



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 22,0 c  
 Edition : 07.07.89  
 Replaces : -  
 Test oil : ISO-4113  
  
 Combination no. : 0 402 640 817  
  
 Injection pump  
 Pump designation : PE12P120A520LS7826  
 EP type number : 0 412 620 817  
 Governor  
 Governor design. : RQV350...1150PA870-4  
 Govenner no. : 0 421 813 717

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 444 LA

1st version kW : 736.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 150...170

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
 : (4.35...4.55)  
 Rack travel in mm : 19.00...21.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345  
 Tolerance + - , : 0.50 (0.75)  
 Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1150  


---

 Rack travel in mm : 14.30...14.40  


---

 Del.quantity cm<sup>3</sup>/ : 31.0...31.2  


---

 100 s: (30.7...31.5)  


---

 Spread cm<sup>3</sup> : 0.6  


---

 100 s: (1.0)

2nd speed rpm : 350.0  
 Rack travel in mm : 5.0...6.6  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL  
 1st speed rpm : 350  
 travel mm : 1.90...2.40  
 2nd speed rpm : 500  
 travel mm : 3.00...3.50  
 3rd speed rpm : 800  
 travel mm : 4.30...4.80  
 4th speed rpm : 1200  
 travel mm : 8.30...8.80  
 5th speed rpm : 1250  
 travel mm : 9.30...9.90

GUIDE SLEEVE POSITION  
 Control-lever position  
 Degree: -1  
 Speed rpm : 1275  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150  
Aneroid pressure h: 1800  
Del.quantity : 310.0...312.0  
1000 : (307.0...315.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (10.00)

RATED SPEED

1st version

Control lever position degrees: 60...68

Testing:

1st rack travel in: 13.30  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1270...1300  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever position degrees: 10...18

Testing:

Speed rpm : 250  
Minimum rack travel: 7.00  
Speed rpm : 350  
Rack travel in mm : 5.00...5.60

CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 7.60...7.90

Measurement

Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in m: 9.00...9.10  
2nd pressure hPa : 1100  
Rack travel in m: 13.20...13.50

START CUT-OUT

Speed 1/min : 310 (330)

FUEL DELIVERY CHARACTERISTICS

E15

1st version

Aneroid pressure h: 1800  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 301.0...311.0  
1000 s: (298.0...314.0)  
Spread cm<sup>3</sup> : 10.00  
1000 s: (15.0)  
Aneroid pressure h: 1800  
Speed rpm : 1150  
Del.quantity cm<sup>3</sup>/ : 240.0...243.0  
1000 s: (237.0...246.0)  
Spread cm<sup>3</sup> : 10.00  
1000 s: (15.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 120.0...122.0  
1000 s: (117.0...125.0)  
Spread cm<sup>3</sup> : 10.00  
1000 s: (15.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.30  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 330.0...350.0  
1000 s: (326.0...354.0)

Remarks:

:

\* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 13,8 e  
 Edition : 23.06.89  
 Replaces : 26.2.88  
 Test oil : ISO-4113

Combination no. : 0 402 646 859

Injection pump  
 Pump designation : PE6P130A72ORS7153  
 EP type number : 0 412 636 809  
 Governor  
 Governor design. : RQV300...950PA883  
 Governor no. : 0 421 813 690

Customer-spec. information  
 Customer : IVECO-UNIC

Engine : 8210.42.300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X3.00X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 12.80...12.90

Del. quantity cm<sup>3</sup>/ : 29.7...30.0  
 100 s: (29.3...30.3)

Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

2nd speed rpm : 300.0  
 Rack travel in mm : 3.7...3.9  
 Del. quantity cm<sup>3</sup>/ : 1.9...2.5  
 100 s: (1.5...2.9)

Spread cm<sup>3</sup> : 1.0  
 100 s: (1.4)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.10...1.50

2nd speed rpm : 450  
 travel mm : 2.80...3.40

3rd speed rpm : 700  
 travel mm : 5.10...5.50

4th speed rpm : 950  
 travel mm : 7.10...7.30

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1000

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Aneroid pressure h: 900

Del. quantity : 297.0...300.0  
 1000 : (293.5...303.5)

Spread cm<sup>3</sup> : 6.00  
 1000 : (10.00)



## RATED SPEED

1st version  
Control lever  
position degrees: 61...69

Testing:  
1st rack travel in: 11.80  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1085...1115  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 3...11

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.30  
Speed rpm : 300  
Rack travel in mm : 3.70...3.90

CONSTANT REGULATION  
Speed rpm : 310...430

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.80...12.90

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.30...8.50  
2nd pressure hPa : 500  
Rack travel in m: 11.80...11.90  
3rd pressure hPa : 380  
Rack travel in m: 9.30...9.70

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 157.0...160.0  
1000 s: (153.5...163.5)

## BREAKAWAY

1st version

E17

1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 990...1000

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

## STARTING FUEL DELIVERY

Speed rpm : 100

## LOW IDLE

Speed rpm : 300  
Rack travel in mm : 3.70...3.90  
Del.quantity cm<sup>3</sup>/ : 19.0...25.0  
1000 s: (15.0...29.0)  
Spread cm<sup>3</sup> : 10.00  
1000 s: (14.00)

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 9,0 l 2  
 Edition : 02.06.89  
 Replaces : 7.2.89  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 860  
 Injection pump  
 Pump designation : PE6P120A320RS7138  
 EP type number : 0 412 626 822  
 Governor  
 Governor design. : RQV350...1100PA795-1  
 Governor no. : 0 421 813 693

Customer-spec. information  
 Customer : SAAB-SCANIA  
 Engine : DS9 52,53,54,55

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
 : (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 16.5...16.7

100 s: (16.2...17.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.5...4.9

Del.quantity cm3/ : 2.0...2.4

100 s: (-)

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

2nd speed rpm : 350

travel mm : 1.30...1.70

3rd speed rpm : 650

travel mm : 4.10...4.70

4th speed rpm : 1145

travel mm : 7.80...8.00

5th speed rpm : 1255

travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position

degree: -1

Speed rpm : 1180

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 165.0...167.0

1000 : (162.0...170.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version  
Control lever  
position degrees: 42...50

Testing:  
1st rack travel in: 11.20  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 100  
Minimum rack travel: 10.30  
Speed rpm : 350  
Rack travel in mm : 4.50...4.70  
Rack travel in mm : 2.00  
Speed rpm : 370...430

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 1100  
Del. quantity cm<sup>3</sup>/ : 163.0...171.0  
1000 s: (161.0...173.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 270.0...320.0  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.50...4.70

Remarks:

:

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

#### ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO  
diaphragm.

Scania test specifications taken over  
on Oct. 17, 1988

For comb. with letter index see  
VDT-I-400/116.

For sealing see VDT-I-400/117.

Start of delivery - engine: 13, before  
TDC

Firing sequence of engine:  
1-5-3-6-2-4.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 9,0 l 3  
 Edition : 02.06.89  
 Replaces : 7.2.89  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 861  
 Injection pump  
 Pump designation : PE6P120A320RS7138  
 EP type number : 0 412 626 822  
 Governor  
 Governor design. : RQV300....925PA712-4  
 Governor no. : 0 421 813 701

Customer-spec. information  
 Customer : SAAB-SCANIA  
 Engine : DS9 52,53,54,55

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test Lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 4.40...4.50  
 : (4.35...4.55)  
 Rack travel in mm : 9.00...12.00

E20

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700  
 Rack travel in mm : 12.20...12.30  
 Del.quantity cm<sup>3</sup>/ : 16.5...16.7  
 100 s : (16.2...17.0)  
 Spread cm<sup>3</sup> : 0.6  
 100 s : (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 4.6...5.0  
 Del.quantity cm<sup>3</sup>/ : 2.0...2.4  
 100 s : (-)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.6)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.40...1.80  
 2nd speed rpm : 350  
 travel mm : 1.90...2.50  
 3rd speed rpm : 650  
 travel mm : 4.70...5.30  
 4th speed rpm : 970  
 travel mm : 8.40...8.60  
 5th speed rpm : 1045  
 travel mm : 9.30...9.70

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 970  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Del.quantity : 165.0...167.0  
 1000 : (162.0...170.0)  
 Spread cm<sup>3</sup> : 6.00  
 1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 44...52

Testing:

1st rack travel in: 11.20  
Speed rpm : 965...975  
2nd rack travel in: 4.00  
Speed rpm : 1030...1060  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 12...20

Testing:

Speed rpm : 100  
Minimum rack travel: 10.00  
Speed rpm : 300  
Rack travel in mm : 4.60...4.80  
Rack travel in mm : 2.00  
Speed rpm : 330...390

## FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1100  
Del. quantity cm<sup>3</sup>/ : 163.0...171.0  
1000 s: (161.0...173.0)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 965...975

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 270.0...320.0  
Rack travel in mm : 20.00...21.00

## LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.60...4.80

Remarks:

:

Delivery-valve spring pre-tension

E21

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

## ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm.

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania on 1988-09-12

Start of delivery - engine: 13, before TDC

Firing sequence of engine:  
1-5-3-6-2-4.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 17,2 e  
 Edition : 30.05.89  
 Replaces : 29.3.89  
 Test oil : ISO-4113

Combination no. : 0 402 648 854

Injection pump  
 Pump designation : PE8P130A920/5LS7822  
 EP type number : 0 412 638 802  
 Governor  
 Governor design. : RQV300...950PA905  
 Govenner no. : 0 421 813 723

Customer-spec. information  
 Customer : IVECO-FIAT

Engine : 8280.42.001

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C. : 40...45

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.10...5.20  
 : (5.05...5.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 4- 3- 6- 5-  
 7- 2

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 550

---

Rack travel in mm : 11.70...11.80

---

Del.quantity cm<sup>3</sup>/ : 23.7...24.0  
 100 s: (23.3...24.3)

---

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

2nd speed rpm : 300.0  
 Rack travel in mm : 5.9...6.1  
 Del.quantity cm<sup>3</sup>/ : 2.0...2.6  
 100 s: (1.6...3.0)

Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.20...1.40

2nd speed rpm : 425  
 travel mm : 3.20...3.80

3rd speed rpm : 650  
 travel mm : 4.90...5.50

4th speed rpm : 950  
 travel mm : 7.90...8.10

5th speed rpm : 1200  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 975  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 550  
 Aneroid pressure h: 900  
 Del.quantity : 237.0...240.0  
 1000 : (233.5...243.5)

Spread cm<sup>3</sup> : 8.00  
1000 : (12.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 57...65

Testing:  
1st rack travel in: 10.70  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1075...1105  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.20  
Speed rpm : 300  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00

CONSTANT REGULATION  
Speed rpm : 320...425

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 11.70...11.80

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.60...9.80  
2nd pressure hPa : 440  
Rack travel in m: 11.10...11.20  
3rd pressure hPa : 400  
Rack travel in m: 10.40...10.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 220.0...227.0  
1000 s: (216.5...230.5)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 173.0...176.0  
1000 s: (169.5...179.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 990...1000

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 210.0...240.0  
1000 s: (206.0...244.0)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 g 2  
 Edition : 30.03.87  
 Replaces : 1.9.87  
 Test oil : ISO-4113  
  
 Combination no. : 0 402 678 804  
  
 Injection pump  
 Pump designation : PE8P120A320LS7801-1  
 EP type number : 0 412 628 818  
 Governor  
 Governor design. : RSV350...1050POA825-  
 4  
 Governor no. : 0 421 833 261

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM442A

1st version kW : 255.0  
 Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness : 6.00X1.50X1000  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (4.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.70...15.80

Del. quantity cm<sup>3</sup>/ : 24.1...24.3

100 s: (23.8...24.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.2...5.4

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del. quantity : 241.0...243.0

1000 : (238.0...246.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version



Control lever  
position degrees: 74...82

Testing:  
1st rack travel in: 14.70  
Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 1135...1150  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 60...68  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.3

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 350  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 350...410

SET IDLE AUXILIARY SPRING  
Speed rpm : 2.00

TORQUE CONTROL  
2nd speed rpm : 900  
Rack travel in m: 13.20...13.40  
3rd speed rpm : 1000  
Rack travel in m: 12.40...12.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 246.0...252.0  
1000 s: (243.0...255.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 250.0...270.0  
1000 s: (246.0...274.0)

Remarks:

:

#### APPLICATION

Generator

E25

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 10,0 o 1  
 Edition : 08.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 745 808  
 Injection pump  
 Pump designation : PES5P120A720LS7163  
 EP type number : 0 412 725 807  
 Governor  
 Governor design. : RQ300/1050PA774-4  
 Governor no. : 0 421 801 453

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM449 LA

1st version kW : 221.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h : 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del. quantity cm<sup>3</sup>/ : 23.5...23.7

100 s : (23.2...24.0)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...5.9

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s : (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h : 800

Del. quantity : 235.0...237.0

1000 : (232.0...240.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.00  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.7

Testing:

Speed rpm : 200  
Minimum rack trave: 7.60  
Speed rpm : 300  
Rack travel in mm : 5.60...5.90  
Rack travel in mm : 2.00  
Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : 0.65  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.00...13.20  
2nd speed rpm : 750  
Rack travel in m: 14.40...14.60

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 800  
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 600

1st pressure hPa : 200  
Rack travel in m: 10.00...11.20  
2nd pressure hPa : 450  
Rack travel in m: 134.00...13.20  
3rd pressure hPa : 1000  
Rack travel in m: 13.70...13.80 \*  
4th pressure hPa : 1125  
Rack travel in m: 14.10...14.30  
5th pressure hPa : -  
Rack travel in m: 10.00...10.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

E27

1st version

Aneroid pressure h: 1400  
Speed rpm : 1050  
Del.quantity cm3/ : 228.0...231.0  
1000 s: (225.0...234.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1400  
Speed rpm : 750  
Del.quantity cm3/ : 250.0...254.0  
1000 s: (247.0...257.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 146.0...148.0  
1000 s: (143.0...151.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks:

:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 a4  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 853  
 Injection pump  
 Pump designation : PES6P120A720RS7157  
 EP type number : 0 412 726 814  
 Governor  
 Governor design. : RQV325...900PA909-1K  
 Governor no. : 0 421 815 211

Customer-spec. information  
 Customer : MACK TRUCKS

Engine : E7-350

1st version kW : 261.0  
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 2 417 413 011

Overflow  
 quantity min. 1/h: 160...170

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.80...13.90

Del. quantity cm<sup>3</sup>/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.7...4.9

Del. quantity cm<sup>3</sup>/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
 travel mm : 1.20...1.40

2nd speed rpm : 450  
 travel mm : 2.80...3.20

3rd speed rpm : 650  
 travel mm : 5.60...5.80

4th speed rpm : 900  
 travel mm : 8.30...8.50

5th speed rpm : 1100  
 travel mm : 10.30...10.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 900  
 Aneroid pressure h: 1200  
 Del. quantity : 233.5...235.5  
 1000 : (230.5...238.5)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 58...66

Testing:  
1st rack travel in: 12.80  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1080...1110  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 7...15

Testing:  
Speed rpm : 275  
Minimum rack travel: 6.30  
Speed rpm : 325  
Rack travel in mm : 4.70...4.90

## CONSTANT REGULATION

Speed rpm : 325...520

## TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 13.80...13.90  
2nd speed rpm : 625  
Rack travel in m: 13.50...13.70  
3rd speed rpm : 500  
Rack travel in m: 11.50...11.90

Aneroid/Altitude  
Compensator Test

## 1st version

Setting  
Speed rpm : 900  
Pressure hPa : 1200  
Rack travel mm : 13.80...13.90

## Measurement

Speed 1/min : 900

1st pressure hPa : -  
Rack travel in m: 7.80...8.20  
2nd pressure hPa : 325  
Rack travel in m: 9.40...9.50  
3rd pressure hPa : 685  
Rack travel in m: 12.10...12.50

## START CUT-OUT

Speed 1/min : 275 (285)

F01

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1200  
Speed rpm : 625  
Del.quantity cm3/ : 266.0...272.0  
1000 s: (263.0...275.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 153.0...157.0  
1000 s: (151.0...159.0)

## BREAKAWAY

### 1st version

1mm rack travel less than  
full load rack tr: 12.80  
Speed rpm : 940...950

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 170.0...210.0  
1000 s: (160.0...220.0)  
Rack travel in mm : 10.10...10.30

## LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.70...4.90  
Del.quantity cm3/ : 40.0...46.0  
1000 s: (38.0...48.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension  
3.0...3.2 mm.

Bow dimension:  
Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 D 3  
 Edition : 07.07.89  
 Replaces : 29.04.88  
 Test oil : ISO-4113

Combination no. : 0 403 436 104

Injection pump  
 Pump designation : PES6MW100/120RS1143  
 EP type number : 0 413 406 137  
 Governor  
 Governor design. : RQV350...1200MW82-1  
 Governor no. : 0 420 083 153

Customer-spec. information  
 Customer : CUMMINS/US

Engine : 6 CTA-830

1st version kW : 179.0  
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.15...3.25  
 : (3.10...3.30)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.00...12.10

Del.quantity cm<sup>3</sup>/ : 13.6...13.8

100 s: (13.4...14.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 7.1...7.2

Del.quantity cm<sup>3</sup>/ : 1.2...1.6

100 s: (1.0...1.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1250

travel mm : 7.60...7.80

2nd speed rpm : 1350

travel mm : 8.60...9.00

3rd speed rpm : 350

travel mm : 1.20...1.60

4th speed rpm : 800

travel mm : 4.90...5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del.quantity : 136.0...138.0

1000 : (134.0...140.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever  
position degrees: 42...50

Testing:

1st rack travel in: 11.00  
Speed rpm : 1250...1260  
2nd rack travel in: 4.00  
Speed rpm : 1375...1405  
4th rack travel in: 1455  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 11...19  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.1

Testing:

Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 7.10...7.20

CONSTANT REGULATION

Speed rpm : 360...500

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 750  
Rack travel in m: 12.50...12.60  
3rd speed rpm : 1000  
Rack travel in m: 12.00...12.10  
4th speed rpm : 900  
Rack travel in m: 12.10...12.30

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.00...11.10

Measurement

Speed 1/min : 500

1st pressure hPa : 390  
Rack travel in m: 11.40...11.50  
2nd pressure hPa : 480  
Rack travel in m: 11.90...12.20  
3rd pressure hPa : 700  
Rack travel in m: 12.50...12.60

START CUT-OUT

F03

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 138.5...140.5  
1000 s: (135.5...143.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 108.0...110.0  
1000 s: (106.0...112.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1250...1260

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 205.0...225.0  
1000 s: (202.0...228.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 7.10...7.20  
Del.quantity cm<sup>3</sup>/ : 12.0...16.0  
1000 s: (10.0...18.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:  
Start-of-delivery mark at 10, cam  
rotation angle after start of delivery,  
cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 F 1  
Edition : 10.02.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 436 105  
Injection pump  
Pump designation : PES6MW100/12ORS1169  
EP type number : 0 413 406 153  
Governor  
Governor design. : RQV350...1200MW78-1  
Governor no. : 0 420 083 156

Customer-spec. information  
Customer : CDC

Engine : 6CTA830

1st version kW : 197.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
                  : (2.95...3.15)

Rack travel in mm : 9.00...12.00

F04

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 11.90...12.00

Del. quantity cm<sup>3</sup>/ : 14.1...14.3

100 s: (13.9...14.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.8

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.4...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.60...9.00

2nd speed rpm : 1250

travel mm : 7.60...7.80

3rd speed rpm : 800

travel mm : 4.90...5.50

4th speed rpm : 350

travel mm : 1.20...1.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 600

Del. quantity : 141.0...143.0

1000 : (139.0...145.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 10.90



Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1385...1415  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.7

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 350  
Rack travel in mm : 5.60...5.80

#### CONSTANT REGULATION

Speed rpm : 370...500

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 300  
Rack travel mm : 11.00...11.10

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.70...10.80  
2nd pressure hPa : 375  
Rack travel in m: 11.50...11.80  
3rd pressure hPa : 600  
Rack travel in m: 11.90...12.00

#### START CUT-OUT

Speed 1/min : 270 (280)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 600  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 137.5...141.5  
1000 s: (135.0...143.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 113.5...115.5  
1000 s: (111.5...117.5)

F05

Spread cm<sup>3</sup> : 3.50  
1000 s: (6.00)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.90  
Speed rpm : 1240...1250

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 218.0...228.0  
1000 s: (215.0...231.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.60...5.80  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (14.0...22.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

Start-of-delivery mark 10.5, cam angle  
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 D12  
 Edition : 30.05.89  
 Replaces : 07.04.89  
 Test oil : ISO-4113

Combination no. : 0 403 436 111

Injection pump  
 Pump designation : PES6MW100/120RS1143  
 EP type number : 0 413 406 137  
 Governor  
 Governor design. : RQV350...1200MW82-6  
 Governor no. : 0 420 083 184

Customer-spec. information  
 Customer : CUMMINS/US

Engine : 6 CTA-830

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.15...3.25  
 : (3.10...3.30)

Rack travel in mm : 9.00...12.00

F06

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.10...12.20

Del. quantity cm<sup>3</sup>/ : 13.8...14.0

100 s : (13.6...14.2)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 7.1...7.3

Del. quantity cm<sup>3</sup>/ : 1.2...1.6

100 s : (1.0...1.8)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1250  
 travel mm : 7.60...7.80

2nd speed rpm : 1350  
 travel mm : 8.60...9.00

3rd speed rpm : 350  
 travel mm : 1.20...1.60

4th speed rpm : 800  
 travel mm : 4.90...5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1200  
 Aneroid pressure h: 700  
 Del. quantity : 138.0...140.0

1000 : (136.0...142.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 42...50

Testing:

1st rack travel in: 11.10  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1370...1400  
4th rack travel in: 1455  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 11...19  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.2

Testing:

Speed rpm : 100  
Minimum rack trave: 9.00  
Speed rpm : 350  
Rack travel in mm : 7.10...7.30

CONSTANT REGULATION

Speed rpm : 360...500

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 12.10...12.20  
2nd speed rpm : 750  
Rack travel in m: 12.50...12.60  
3rd speed rpm : 1000  
Rack travel in m: 12.10...12.20  
4th speed rpm : 900  
Rack travel in m: 12.20...12.40

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.70...10.80

Measurement

Speed 1/min : 500

1st pressure hPa : 390  
Rack travel in m: 11.00...11.10  
2nd pressure hPa : 500  
Rack travel in m: 11.60...11.90  
3rd pressure hPa : 700  
Rack travel in m: 12.50...12.60

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

F07

1st version

Aneroid pressure h: 700  
Speed rpm : 750  
Del.quantity cm3/ : 139.0...142.0  
1000 s: (136.5...144.5)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 100.0...102.0  
1000 s: (98.0...104.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10  
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 205.0...225.0  
1000 s: (202.0...228.0)

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 7.10...7.30  
Del.quantity cm3/ : 12.0...16.0  
1000 s: (10.0...18.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

: C.D.C. #3916000

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 4,5 K  
 Edition : 30.05.89  
 Replaces : 19.12.88  
 Test oil : ISO-4113  
  
 Combination no. : 0 403 444 108  
  
 Injection pump  
 Pump designation : PES4MW100/320RS1116  
 EP type number : 0 413 404 102  
 Governor  
 Governor design. : RQV300...1100MW51  
 Governor no. : 0 420 083 072

Customer-spec. information  
 Customer : VOLVO-BM

Engine : TD45-EM

1st version kW : 85.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00

F08

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.50...12.60

Del. quantity cm<sup>3</sup>/ : 11.6...11.8

100 s: (11.4...12.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...5.9

Del. quantity cm<sup>3</sup>/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1220

travel mm : 9.20...9.60

2nd speed rpm : 1150

travel mm : 8.40...8.60

3rd speed rpm : 420

travel mm : 1.70...2.30

4th speed rpm : 300

travel mm : 1.00...1.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 750

Del. quantity : 116.0...118.0

1000 : (114.0...120.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 48...56

Testing:  
1st rack travel in: 11.50  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.8

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.80...5.90

CONSTANT REGULATION  
Speed rpm : 330...450

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 700  
Pressure hPa : 265  
Rack travel mm : 10.60...10.70

Measurement  
Speed 1/min : 700

1st pressure hPa : 750  
Rack travel in m: 12.5...12.60  
2nd pressure hPa : -  
Rack travel in m: 10.50...10.60  
3rd pressure hPa : 520  
Rack travel in m: 12.40...12.60

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 750  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 117.0...121.0  
1000 s: (114.5...123.5)

Spread cm<sup>3</sup> : 5.50  
1000 s: (6.0)  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 79.0...81.0  
1000 s: (76.5...83.5)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...140.0  
1000 s: (127.0...143.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.80...5.90  
Del.quantity cm<sup>3</sup>/ : 13.0...17.0  
1000 s: (10.5...19.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 F  
 Edition : 09.06.89  
 Replaces : 04.86  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 129  
 Injection pump  
 Pump designation : PES6MW100/32ORS1016  
 EP type number : 0 413 406 010  
 Governor  
 Governor design. : RQV300...1400MW25-2  
 Governor no. : 0 420 083 048

Customer-spec. information  
 Customer : RVI

Engine : MIDR06.02-12

1st version kW : 125.0  
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 2 417 413 033

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 173...176

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

F10

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 11.10...11.20

Del.quantity cm<sup>3</sup>/ : 9.1...9.3

100 s : (8.9...9.5)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.30...6.50

Del.quantity cm<sup>3</sup>/ : 1.5...1.9

100 s : (1.2...2.1)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1400

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Aneroid pressure h: 700

Del.quantity : 91.0...93.0

1000 : (89.0...95.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 58...66

Testing:

1st rack travel in: 10.10

Speed rpm : 1450...1460

2nd rack travel in: 4.00

Speed rpm : 1565...1595

4th rack travel in: 1700

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 9...17  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.7  
Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 490...550  
Speed rpm : 200  
Maximum rack trave: 7.90

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 500  
Rack travel mm : 11.10...11.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.40...9.50  
2nd pressure hPa : 120  
Rack travel in m: 9.90...10.00  
3rd pressure hPa : 155  
Rack travel in m: 10.70...10.80

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 900  
Del.quantity cm3/ : 86.0...90.0  
1000 s: (84.0...92.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 52.0...54.0  
1000 s: (50.0...56.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 94.0...104.0  
1000 s: (91.0...107.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Del.quantity cm3/ : 15.0...19.0  
1000 s: (12.5...21.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:  
Start-of-delivery mark is 8, after  
start of delivery with control-rod  
travel = 10.5 mm.

F11

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 K 4  
 Edition : 09.06.89  
 Replaces : 12.09.86  
 Test oil : ISO-4113

Combination no. : 0 403 446 164

Injection pump  
 Pump designation : PES6MW100/32ORS1016  
 EP type number : 0 413 406 010  
 Governor  
 Governor design. : RQV300...1300MW25-4  
 Governor no. : 0 420 083 094

Customer-spec. information  
 Customer : RVI

Engine : MIDR06.02-12

1st version kW : 113.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 2 417 413 033

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 173...176

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.80...10.90

Del. quantity cm<sup>3</sup>/ : 8.5...8.7

100 s: (8.3...8.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.20...6.40

Del. quantity cm<sup>3</sup>/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1300

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del. quantity : 85.5...87.5

1000 : (83.5...89.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 57...65

Testing:

1st rack travel in: 9.80

Speed rpm : 1370...1380

2nd rack travel in: 4.00

Speed rpm : 1485...1515

4th rack travel in: 1650

Speed rpm : 0.00...1.00

## LOW IDLE 1



Control Lever  
position degrees: 8...16  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.5  
Speed rpm : 300  
Rack travel in mm : 6.20...6.40  
Speed rpm : 200  
Maximum rack travel: 3.20

CONSTANT REGULATION  
Speed rpm : 340...550

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 143  
Rack travel mm : 10.50...10.60

Measurement  
Speed 1/min : 500

1st pressure hPa : 700  
Rack travel in m: 10.80...10.90  
2nd pressure hPa : -  
Rack travel in m: 9.80...9.90  
3rd pressure hPa : 115  
Rack travel in m: 9.80...10.10

#### START CUT-OUT

Speed 1/min : 230 (250)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 82.0...86.0  
1000 s: (80.0...88.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 56.0...58.0  
1000 s: (54.0...60.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.80  
Speed rpm : 1370...1380

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...110.0  
1000 s: (97.0...113.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.20...6.40  
Del.quantity cm<sup>3</sup>/ : 14.0...18.0  
1000 s: (11.5...20.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:  
Start-of-delivery mark 10.5, cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 6,1 N 6  
Edition : 28.06.89  
Replaces : 29.03.89  
Test oil : ISO-4113

Combination no. : 0 403 446 166

Injection pump  
Pump designation : PES6MW100/720RS1133  
EP type number : 0 413 406 126  
Governor  
Governor design. : RQ325/1325MW65  
Governor no. : 0 420 082 018

Customer-spec. information  
Customer : KHD

Engine : BF 6L 913 BW

1st version kW : 124.0  
Rated speed : 2650

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
                  : (3.45...3.65)

Rack travel in mm : 9.00...12.00

F14

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1325

Rack travel in mm : 11.10...11.20

Del.quantity cm<sup>3</sup>/ : 10.2...10.4

100 s: (10.0...10.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.0...7.1

Del.quantity cm<sup>3</sup>/ : 1.1...1.5

100 s: (0.9...1.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1460

travel mm : 8.60...9.20

2nd speed rpm : 1380

travel mm : 6.50...6.70

3rd speed rpm : 425

travel mm : 4.00...4.40

4th speed rpm : 300

travel mm : 2.00...2.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 700

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1325

Aneroid pressure h: 800

Del.quantity : 102.0...104.0

1000 : (100.0...106.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 26...34

Setting point:  
Speed rpm : 700  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 10.10  
Speed rpm : 1370...1385  
2nd rack travel in: 4.00  
Speed rpm : 1440...1470  
4th rack travel in: 1550  
Speed rpm : 0.10...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.0

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.60  
Speed rpm : 300  
Rack travel in mm : 7.00...7.10

CONSTANT REGULATION  
Speed rpm : 340...450

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 450  
Rack travel mm : 10.50...10.60

Measurement  
Speed 1/min : 500

1st pressure hPa : 800  
Rack travel in m: 11.10...10.20  
2nd pressure hPa : -  
Rack travel in m: 9.40...9.50  
3rd pressure hPa : 350  
Rack travel in m: 9.90...10.20

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 800  
Speed rpm : 850  
Del.quantity cm<sup>3</sup>/ : 94.0...98.0  
1000 s: (92.0...100.0)

Spread cm<sup>3</sup> : 3.50  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 56.0...58.0  
1000 s: (54.0...60.0)

#### RACK STOP ADJUSTMENT

Speed rpm : 100

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1370...1385

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 120.0...140.0  
1000 s: (117.0...143.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.00...7.10  
Del.quantity cm<sup>3</sup>/ : 11.0...15.0  
1000 s: (9.0...17.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 6,1 P 3  
 Edition : 28.06.89  
 Replaces : 06.11.87  
 Test oil : ISO-4113

Combination no. : 0 403 446 167

Injection pump  
 Pump designation : PES6MW100/32ORS1136  
 EP type number : 0 413 406 128  
 Governor  
 Governor design. : RQV350...1100MW54-2  
 Govenor no. : 0 420 083 096

Customer-spec. information  
 Customer : VOLVO

Engine : TD 61

1st version kW : 111.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness : 6.00X2.00X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.40...12.50

Del.quantity cm<sup>3</sup>/ : 11.0...11.2

100 s: (10.8...11.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.3...6.4

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.4...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1210

travel mm : 9.50...9.90

2nd speed rpm : 1150

travel mm : 8.60...8.80

3rd speed rpm : 550

travel mm : 2.30...2.90

4th speed rpm : 300

travel mm : 0.70...1.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 110.0...112.0

1000 : (108.0...114.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version  
Control lever  
position degrees: 44...52

Testing:  
1st rack travel in: 11.40  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1350  
Speed rpm : 0.10...1.00

LOW IDLE 1  
Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.3

Testing:  
Speed rpm : 100  
Minimum rack trave: 7.80  
Speed rpm : 350  
Rack travel in mm : 6.30...6.40

CONSTANT REGULATION  
Speed rpm : 370...450

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 440  
Rack travel mm : 12.10...12.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.90...11.00  
2nd pressure hPa : 230  
Rack travel in m: 11.10...11.40  
3rd pressure hPa : 1000  
Rack travel in m: 12.40...12.50

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 111.0...115.0  
1000 s: (109.0...117.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 700

Del.quantity cm<sup>3</sup>/ : 82.0...84.0  
1000 s: (80.0...86.0)

#### RACK STOP ADJUSTMENT

Speed rpm : 100

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (137.0...163.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.30...6.40  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (14.0...22.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.00)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 34  
 Edition : 16.06.89  
 Replaces : 05.08.88  
 Test oil : ISO-4113  
  
 Combination no. : 0 403 446 184  
  
 Injection pump  
 Pump designation : PES6MW100/72ORS1144  
 EP type number : 0 413 406 138  
 Governor  
 Governor design. : RQV300...1300MW48-3  
 Governor no. : 0 420 083 121

Customer-spec. information  
 Customer : DB

Engine : OM366A

1st version kW : 125.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.90...11.00

Del.quantity cm<sup>3</sup>/ : 7.2...7.4

100 s: (7.0...7.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...7.9

Del.quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1340

travel mm : 8.50...8.70

2nd speed rpm : 1450

travel mm : 9.30...9.70

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del.quantity : 72.0...74.0

1000 : (70.0...76.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 50...58

Testing:

1st rack travel in: 9.90  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1425...1455  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.8

Testing:

Speed rpm : 100  
Minimum rack travel: 9.30  
Speed rpm : 300  
Rack travel in mm : 7.80...7.90

CONSTANT REGULATION

Speed rpm : 330...500

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1300  
Rack travel in m: 10.90...11.00  
2nd speed rpm : 800  
Rack travel in m: 11.60...11.80  
3rd speed rpm : 585  
Rack travel in m: 11.80...12.00

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800  
Del.quantity cm3/ : 71.0...73.0  
1000 s: (69.0...75.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Speed rpm : 585  
Del.quantity cm3/ : 65.0...68.0  
1000 s: (62.5...70.5)  
Spread cm3 : 5.00  
1000 s: (7.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 78.0...88.0  
1000 s: (75.0...91.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.80...7.90  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 6,1 N 9  
Edition : 28.06.89  
Replaces : 29.03.89  
Test oil : ISO-4113

Combination no. : 0 403 446 186

Injection pump  
Pump designation : PES6MW100/720RS1133  
EP type number : 0 413 406 126  
Governor  
Governor design. : RQV325...1325MW79  
Governor no. : 0 420 083 123

Customer-spec. information  
Customer : KHD

Engine : BF 6L 913

1st version kW : 124.0  
Rated speed : 2650

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)

Rack travel in mm : 9.00...12.00

F20

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1325

Rack travel in mm : 10.50...10.60

Del. quantity cm<sup>3</sup>/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 325.0

Rack travel in mm : 6.8...6.9

Del. quantity cm<sup>3</sup>/ : 1.1...1.5

100 s: (0.9...1.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1375

travel mm : 8.70...8.90

2nd speed rpm : 1430

travel mm : 9.50...9.90

3rd speed rpm : 325

travel mm : 1.50...1.90

4th speed rpm : 600

travel mm : 2.70...3.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1400

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1325

Aneroid pressure h: 900

Del. quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED



1st version  
Control lever  
position degrees: 50...58

Testing:

1st rack travel in: 9.50  
Speed rpm : 1370...1380  
2nd rack travel in: 4.00  
Speed rpm : 1445...1475  
4th rack travel in: 1550  
Speed rpm : 0.10...1.00

LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6.8

Testing:

Speed rpm : 100  
Minimum rack travel: 8.60  
Speed rpm : 325  
Rack travel in mm : 6.80...6.90

CONSTANT REGULATION

Speed rpm : 350...650

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 450  
Rack travel mm : 9.90...10.00

Measurement

Speed 1/min : 500  
1st pressure hPa : -  
Rack travel in m: 8.90...9.00  
2nd pressure hPa : 350  
Rack travel in m: 9.30...9.60  
3rd pressure hPa : 900  
Rack travel in m: 10.50...10.60

START CUT-OUT

Speed 1/min : 245 (255)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900  
Speed rpm : 850  
Del.quantity cm<sup>3</sup>/ : 93.0...97.0  
1000 s: (91.0...99.0)

Spread cm<sup>3</sup> : 3.50  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 57.0...59.0  
1000 s: (55.0...61.0)

RACK STOP ADJUSTMENT

Speed rpm : 100

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1370...1380

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)

LOW IDLE

Speed rpm : 325  
Rack travel in mm : 6.80...6.90  
Del.quantity cm<sup>3</sup>/ : 11.0...15.0  
1000 s: (9.0...17.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.00)

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 Q  
 Edition : 23.06.89  
 Replaces : 07.02.89  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 190  
 Injection pump  
 Pump designation : PES6MW100/32ORS1154  
 EP type number : 0 413 406 144  
 Governor  
 Governor design. : RQV275...1250MW80  
 Governor no. : 0 420 083 128

Customer-spec. information  
 Customer : RVI

Engine : MIDR 060226

1st version kW : 128.7  
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 2 417 413 033

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)

Rack travel in mm : 16.50...19.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.90...13.00

Del. quantity cm<sup>3</sup>/ : 9.9...10.1

100 s: (9.7...10.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 275.0

Rack travel in mm : 6.10...6.30

Del. quantity cm<sup>3</sup>/ : 2.3...2.7

100 s: (2.0...2.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1475

travel mm : 9.20...9.60

2nd speed rpm : 1300

travel mm : 7.80...8.00

3rd speed rpm : 500

travel mm : 3.00...3.60

4th speed rpm : 275

travel mm : 1.00...1.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1360

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 800

Del. quantity : 99.5...101.5

1000 : (97.5...103.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version  
Control lever  
position degrees: 48...56

Testing:  
1st rack travel in: 12.00  
Speed rpm : 1330...1350  
2nd rack travel in: 4.00  
Speed rpm : 1490...1530  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 6.8

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.70  
Speed rpm : 275  
Rack travel in mm : 6.10...6.30

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 800  
Rack travel mm : 12.90...13.00

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.00...11.10  
2nd pressure hPa : 200  
Rack travel in m: 11.50...11.80  
3rd pressure hPa : 360  
Rack travel in m: 12.60...12.70

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 800  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 91.5...94.5  
1000 s: (89.0...97.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 49.0...51.0  
1000 s: (47.0...53.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 1330...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 88.0...102.0  
1000 s: (85.0...105.0)  
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 275  
Rack travel in mm : 6.10...6.30  
Del.quantity cm<sup>3</sup>/ : 23.0...27.0  
1000 s: (20.5...29.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 S 2  
 Edition : 31.03.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 220  
 Injection pump  
 Pump designation : PES6MW100/320RS1171  
 EP type number : 0 413 406 156  
 Governor  
 Governor design. : RQV300...1400MW80-3  
 Governor no. : 0 420 083 183

Customer-spec. information  
 Customer : RVI

Engine : MIDR 06.02.12D

1st version kw : 134.0  
 Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 2 417 413 033

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 173...176

Test Lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

F24

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 12.60...12.70

Del.quantity cm<sup>3</sup>/ : 9.2...9.4

100 s: (9.0...9.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.70...6.90

Del.quantity cm<sup>3</sup>/ : 1.5...1.9

100 s: (1.2...2.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1590

travel mm : 9.50...9.90

2nd speed rpm : 1450

travel mm : 8.50...8.70

3rd speed rpm : 500

travel mm : 2.80...3.40

4th speed rpm : 300

travel mm : 1.20...1.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Aneroid pressure h: 750

Del.quantity : 92.0...94.0

1000 : (90.0...96.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 63...71

Testing:

1st rack travel in: 11.60

Speed rpm : 1470...1480  
2nd rack travel in: 4.00  
Speed rpm : 1600...1630  
4th rack travel in: 1700  
Speed rpm : 1.00...0.00

#### LOW IDLE 1

Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.8

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.20  
Speed rpm : 300  
Rack travel in mm : 6.70...6.90

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.90...12.00

#### Measurement

Speed 1/min : 500

1st pressure hPa : 80  
Rack travel in m: 10.40...10.50  
2nd pressure hPa : 200  
Rack travel in m: 11.80...12.10  
3rd pressure hPa : 750  
Rack travel in m: 12.60...12.70

#### START CUT-OUT

Speed 1/min : 230 (250)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 750  
Speed rpm : 900  
Del.quantity cm3/ : 86.5...89.5  
1000 s: (84.0...92.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 42.0...44.0  
1000 s: (40.0...46.0)

#### BREAKAWAY

F25

1st version  
1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 1470...1480

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 95.0...115.0  
1000 s: (92.0...118.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.70...6.90  
Del.quantity cm3/ : 15.0...19.0  
1000 s: (12.5...21.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:  
Start-of-delivery mark mode with  
prestroke 3.00...3.10 mm at barrel 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 7,2 Q  
 Edition : 23.06.89  
 Replaces : -  
 Test oil : ISO-4113  
  
 Combination no. : 0 403 456 105  
  
 Injection pump  
 Pump designation : PES6MW100/321RS1186  
 EP type number : 0 413 406 168  
 Governor  
 Governor design. : RQ250/1200MW84-2  
 Governor no. : 0 420 082 040

Customer-spec. information  
 Customer : MAN

Engine : D 0826 LUH

1st version kW : 157.0  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70  
 : (3.55...3.75)

Rack travel in mm : 15.00...0.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.00...12.10

Del. quantity cm<sup>3</sup>/ : 12.6...12.8

100 s: (12.4...13.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.2...5.4

Del. quantity cm<sup>3</sup>/ : 1.9...2.3

100 s: (1.6...2.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1280

travel mm : 9.50...9.90

2nd speed rpm : 1250

travel mm : 7.50...7.70

3rd speed rpm : 350

travel mm : 5.20...5.80

4th speed rpm : 250

travel mm : 2.30...2.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 14.70...16.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del. quantity : 126.0...128.0

1000 : (124.0...130.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 34...42

Setting point:

Speed rpm : 600

Rack travel in mm : 15.5

Testing:

1st rack travel in: 10.50

Speed rpm : 1245...1260

2nd rack travel in: 4.00

Speed rpm : 1270...1300

4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 8...16

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 5.3

Testing:

Speed rpm : 100

Minimum rack travel: 7.30

Speed rpm : 250

Rack travel in mm : 5.20...5.40

TORQUE CONTROL

Dimension a mm : 0.30

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 12.00...12.10

2nd speed rpm : 600

Rack travel in m: 12.50...12.60

3rd speed rpm : 800

Rack travel in m: 12.50...12.60

4th speed rpm : 1200

Rack travel in m: 11.50...11.60

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 200

Rack travel mm : 9.60...9.70

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.30...9.40

2nd pressure hPa : 400

Rack travel in m: 10.90...11.20

F27

3rd pressure hPa : 1000

Rack travel in m: 12.50...12.60

START CUT-OUT

Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 600

Del.quantity cm3/ : 124.0...127.0

1000 s: (121.5...129.5)

Spread cm3 : 5.00

1000 s: (7.0)

Aneroid pressure h: 1000

Speed rpm : 800

Del.quantity cm3/ : 124.0...127.0

1000 s: (121.5...129.5)

Aneroid pressure h: 1000

Speed rpm : 1200

Del.quantity cm3/ : 124.5...127.5

1000 s: (122.0...130.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 74.0...76.0

1000 s: (72.0...78.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50

Speed rpm : 1245...1260

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 130.0...140.0

1000 s: (127.0...143.0)

LOW IDLE

Speed rpm : 250

Rack travel in mm : 5.20...5.40

Del.quantity cm3/ : 19.0...23.0

1000 s: (16.5...25.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

:

Start-of-delivery mark is at start of delivery of cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 E 1  
 Edition : 03.07.89  
 Replaces : 07.02.89  
 Test oil : ISO-4113  
  
 Combination no. : 0 403 466 107DA  
  
 Injection pump  
 Pump designation : PES6MW100/120RS1148  
 EP type number : 0 413 406 143  
 Governor  
 Governor design. : RSV400...900MW7A319-5  
 Governor no. : 0 420 085 082  
  
 Cust. part no. : 3909342  
  
 Customer-spec. information  
 Customer : CUMMINS/US  
  
 Engine : 6 CTA  
  
 1st version kW : 171.0  
 Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42  
  
 Overflow valve : 1 417 413 047  
  
 Inlet press., bar : 1.50  
  
 Test nozzle holder  
 assembly : 1 688 901 017  
  
 Opening  
 pressure, bar : 207...210  
  
 Orifice plate  
 diameter mm : 0,6  
  
 Test lines : 1 680 750 014  
  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600  
  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32  
  
 Prestroke mm : 3.60...3.70  
 : (3.55...3.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4  
  
 Phasing : 0-60-120-180-240-300  
  
 Tolerance + - , : 0.50 (0.75)  
  
 Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 750  


---

 Rack travel in mm : 13.00...13.10  


---

 Del.quantity cm3/ : 17.9...18.1  
 100 s : (17.7...18.3)  


---

 Spread cm3 : 0.3  
 100 s : (0.6)  


---

 2nd speed rpm : 400.0  
 Rack travel in mm : 6.0...6.2  
 Del.quantity cm3/ : 1.6...2.0  
 100 s : (1.3...2.2)  
 Spread cm3 : 0.3  
 100 s : (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 750  
 Del.quantity : 179.5...181.5  
 1000 : (177.5...183.5)  
 Spread cm3 : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 47...55  
  
 Setting point:  
 Speed rpm : 800



Rack travel in mm : 0.6

from holding magnet = 500 1/min.

Testing:

1st rack travel in: 12.00  
Speed rpm : 790...800  
2nd rack travel in: 4.00  
Speed rpm : 820...850  
4th rack travel in: 1000  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 6.1

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 6.00...6.20

SET IDLE AUXILIARY SPRING

Rack travel in mm : 4.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 790...800

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...145.0  
1000 s: (122.0...148.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.00...6.20  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

Start-of-delivery mark  $\varphi$ , cam angle  
after start of delivery cyl. 1.

Starting/full-load transition speed

G02

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 I 1  
 Edition : 23.06.89  
 Replaces : -  
 Test oil : ISO-4113  
  
 Combination no. : 0 403 466 118  
  
 Injection pump  
 Pump designation : PES6MW100/120RS1178  
 EP type number : 0 413 406 160  
 Governor  
 Governor design. : RSV425...1250MW2A332  
 -1  
 Governor no. : 0 420 085 111

Customer-spec. information  
 Customer : CUMMINS

Engine : 6 CT

1st version kW : 204.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

G03

Prestroke mm : 3.45...3.55  
 : (3.40...3.60)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 13.70...13.80

Del.quantity cm<sup>3</sup>/ : 14.7...14.9

100 s: (14.5...15.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.4...5.6

Del.quantity cm<sup>3</sup>/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 900

Del.quantity : 147.0...149.0

1000 : (145.0...151.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 55...63

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:  
1st rack travel in: 12.70  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1405...1435  
4th rack travel in: 1650  
Speed rpm : 0.30...1.70

LOW IDLE 1  
Control lever  
position degrees: 30...38  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.0

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 540...600

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 4.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.60...10.70

Measurement  
Speed 1/min : 500

1st pressure hPa : 305  
Rack travel in m: 11.60...11.70  
2nd pressure hPa : 465  
Rack travel in m: 12.90...13.20  
3rd pressure hPa : 900  
Rack travel in m: 13.70...13.80

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 92.5...94.5  
1000 s: (90.5...96.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

BREAKAWAY

G04

1st version  
1mm rack travel less than  
full load rack tr: 12.70  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (147.0...173.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.40...5.60  
Del.quantity cm<sup>3</sup>/ : 11.0...15.0  
1000 s: (8.5...17.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:  
: C.D.C. #3913733

Start-of-delivery mark at 14, angular displacement of the cam after start of delivery of cylinder 1

Check hydraulic latching of starting fuel delivery with 1.5 bar air.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 E 3  
 Edition : 23.06.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 466 119  
 Injection pump  
 Pump designation : PES6MW100/120RS1148  
 EP type number : 0 413 406 143  
 Governor  
 Governor design. : RSV400...750MW7A319-  
 14  
 Governor no. : 0 420 085 120

Customer-spec. information  
 Customer : CUMMINS

Engine : 6 CTA

1st version kW : 180.0  
 Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

G05

Prestroke mm : 3.60...3.70  
 : (3.55...3.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 13.00...13.10

Del. quantity cm<sup>3</sup>/ : 17.9...18.1

100 s: (17.7...18.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 6.0...6.2

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del. quantity : 179.5...181.5

1000 : (177.5...183.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 40...48

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.00  
Speed rpm : 790...800  
2nd rack travel in: 4.00  
Speed rpm : 820...850  
4th rack travel in: 1000  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 6.1

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 6.00...6.20

SET IDLE AUXILIARY SPRING

Rack travel in mm : 4.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 790...800

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...145.0  
1000 s: (122.0...148.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.00...6.20  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

: C.D.C. #3914872

Start-of-delivery mark 9, cam angle  
after start of delivery cyl. 1.

Starting/full-load transition speed  
from holding magnet = 500 1/min.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 5,5 A 1  
Edition : 13.06.88  
Replaces : 12.09.86  
Test oil : ISO-4113

Combination no. : 0 403 476 013

Injection pump  
Pump designation : PES6MW80/32ORS1104  
EP type number : 0 413 486 002  
Governor  
Governor design. : RSV300...1450MWOA801  
-1  
Governor no. : 0 420 085 067

Customer-spec. information  
Customer : RVI

Engine : MD060212

1st version kW : 97.8  
Rated speed : 2900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 2 417 413 028

Inlet press., bar : 2.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 173...176

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.75...1.85  
: (1.70...1.90)

GO7

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 11.20...11.30

Del. quantity cm<sup>3</sup>/ : 5.2...5.4

100 s: (5.0...5.6)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 6.60...6.70

Del. quantity cm<sup>3</sup>/ : 1.2...1.5

100 s: (1.1...1.7)

Spread cm<sup>3</sup> : 0.2

100 s: (0.3)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del. quantity : 52.5...54.5

1000 : (50.5...56.5)

Spread cm<sup>3</sup> : 2.50

1000 : (4.00)

## RATED SPEED

1st version

Control lever

position degrees: 56...64

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 9.20

Speed rpm : 1520...1530

2nd rack travel in: 4.00

Speed rpm : 1615...1645

4th rack travel in: 1700  
Speed rpm : 0.80...1.70

#### LOW IDLE 1

Control lever  
position degrees: 29...37  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.5  
Speed rpm : 300  
Rack travel in mm : 6.60...6.70  
Speed rpm : 250  
Maximum rack travel: 8.00

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 11.20...11.30  
2nd speed rpm : 1450  
Rack travel in m: 10.20...10.30  
3rd speed rpm : 1100  
Rack travel in m: 10.50...10.70

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 1450  
Del. quantity cm<sup>3</sup>/ : 54.5...56.5  
1000 s: (52.5...58.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (4.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.20  
Speed rpm : 1520...1530

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 67.0...77.0  
1000 s: (64.0...80.0)  
Rack travel in mm : 0.00...15.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.60...6.70  
Del. quantity cm<sup>3</sup>/ : 12.5...15.5  
1000 s: (11.0...17.0)  
Spread cm<sup>3</sup> : 2.00  
1000 s: (3.50)

Remarks:

G08

:  
Position idle auxiliary spring to make contact, then turn back 1/4 rotation

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 M  
 Edition : 28.06.89  
 Replaces : 29.03.89  
 Test oil : ISO-4113

Combination no. : 0 403 476 060

Injection pump  
 Pump designation : PES6MW100/720RS1161  
 EP type number : 0 413 406 148  
 Governor  
 Governor design. : RSV325...1150MW5A327  
 Governor no. : 0 420 085 084

Customer-spec. information  
 Customer : KHD

Engine : BF6L913C

1st version kW : 134.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.45...3.55  
 : (3.40...3.60)

Rack travel in mm : 9.00...12.00

G09

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 12.3...12.5

100 s: (12.1...12.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 325.0

Rack travel in mm : 4.9...5.0

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 1000

Del.quantity : 123.0...125.0

1000 : (121.0...127.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 52...60

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.80

Speed rpm : 1200...1210

2nd rack travel in: 4.00

Speed rpm : 1245...1275



4th rack travel in: 1440  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 18...25  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 4.7

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 325  
Rack travel in mm : 4.70...4.80  
Rack travel in mm : 2.00  
Speed rpm : 455...515

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 800  
Rack travel in m: 13.20...13.30  
3rd speed rpm : 900  
Rack travel in m: 13.00...13.20  
4th speed rpm : 1000  
Rack travel in m: 12.80...13.00

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 500  
Rack travel mm : 11.60...11.70

#### Measurement

Speed 1/min : 500  
1st pressure hPa : 1000  
Rack travel in m: 13.20...13.30  
2nd pressure hPa : -  
Rack travel in m: 10.50...10.60  
3rd pressure hPa : 650  
Rack travel in m: 12.30...12.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 125.0...129.0  
1000 s: (123.0...131.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 74.0...76.0  
1000 s: (72.0...78.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 1200...1210

#### STARTING FUEL DELIVERY

Del.quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.90...5.00  
Del.quantity cm<sup>3</sup>/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 73  
Edition : 16.06.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 403 476 067  
  
Injection pump  
Pump designation : PES6MW100/720RS1131  
EP type number : 0 413 406 123  
Governor  
Governor design. : RSV350...1300MWOA2  
Governor no. : 0 420 085 109

Customer-spec. information  
Customer : DB-NKW

Engine : OM 366 LA

1st version kW : 150.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.60...12.70

Del.quantity cm<sup>3</sup>/ : 10.0...10.2

100 s: (9.8...10.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.2...6.9

Del.quantity cm<sup>3</sup>/ : 1.0...1.2

100 s: (0.6...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 100.0...102.0

1000 : (98.0...104.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 44...52

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.60

Speed rpm : 1340...1345  
2nd rack travel in: 4.00  
Speed rpm : 1387...1400  
3rd rack travel in: 4.00  
Speed rpm : 1420...1450  
4th rack travel in: 1600  
Speed rpm : 0.30...1.70  
5th rack travel in: 1335...1350  
Speed rpm : 11.60

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 6.20...6.90  
Rack travel in mm : 2.00  
Speed rpm : 420...480

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 250  
Rack travel mm : 11.30...11.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.80...10.90  
2nd pressure hPa : 400  
Rack travel in m: 12.10...12.40  
3rd pressure hPa : 700  
Rack travel in m: 12.60...12.70

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 86.5...89.5  
1000 s: (84.0...92.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 53.0...55.0  
1000 s: (51.0...57.0)

#### BREAKAWAY

G12

1st version  
1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 1340...1345

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 83.0...93.0  
1000 s: (80.0...96.0)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.20...6.90  
Del.quantity cm<sup>3</sup>/ : 10.0...12.0  
1000 s: (6.5...15.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

:

Test hydr. locking device for starting  
with 500...1999 hPa air pressure.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 12,7 T7  
 Edition : 07.02.89  
 Replaces : -  
 Test oil : ISO-4113  
  
 Combination no. : 0 403 548 030  
  
 Injection pump  
 Pump designation : PE8MW100/720LS1117  
 EP type number : 0 413 508 101  
 Governor  
 Governor design. : RQ300/1000MW104  
 Governor no. : 0 420 082 034

Customer-spec. information  
 Customer : KHD

Engine : F 8L 513

1st version kW : 150.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20  
 : (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-  
4- 3

Phasing : 0-45-90-135-180-225-  
270-315  
 Tolerance + - : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.30...11.40

Del. quantity cm<sup>3</sup>/ : 9.1...9.3

100 s: (8.9...9.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.9...8.1

Del. quantity cm<sup>3</sup>/ : 0.5...0.9

100 s: (0.3...1.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1100  
 travel mm : 8.90...9.30

2nd speed rpm : 1050  
 travel mm : 6.90...7.10

3rd speed rpm : 350  
 travel mm : 3.90...4.50

4th speed rpm : 300  
 travel mm : 2.00...2.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 550

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del. quantity : 91.0...93.0

1000 : (89.0...95.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 30...38

Setting point:  
Speed rpm : 550  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 10.30  
Speed rpm : 1040...1055  
2nd rack travel in: 4.00  
Speed rpm : 1085...1115  
3rd rack travel in: 4.00  
4th rack travel in: 1180  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.0

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.50  
Speed rpm : 300  
Rack travel in mm : 7.90...8.10  
Rack travel in mm : 2.00

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.30...11.40  
2nd speed rpm : 600  
Rack travel in m: 12.80...12.90  
3rd speed rpm : 850  
Rack travel in m: 12.20...12.50

#### START CUT-OUT

Speed 1/min : 220 (250)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 101.5...104.5  
1000 s: (99.0...107.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 1040...1055

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (132.0...158.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.90...8.10  
Del.quantity cm<sup>3</sup>/ : 5.0...9.0  
1000 s: (3.0...11.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

Set warm starting fuel delivery  
90...95 cm<sup>3</sup> /1000 strokes at  
n = 100 min<sup>-1</sup> at spool

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 13,4D16  
 Edition : 16.06.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 548 034  
 Injection pump  
 Pump designation : PE8MW100/720LS1128  
 EP type number : 0 413 508 103  
 Governor  
 Governor design. : RQ300/1150MW63-6  
 Governor no. : 0 420 082 038

Customer-spec. information  
 Customer : KHD

Engine : BF 8L 513

1st version kW : 243.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20  
 : (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-  
 4- 3

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.60...13.70

Del.quantity cm3/ : 15.1...15.3

100 s : (14.9...15.5)

Spread cm3 : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.6...6.8

Del.quantity cm3/ : 1.3...1.7

100 s : (1.1...1.9)

Spread cm3 : 0.3

100 s : (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1280

travel mm : 9.70...10.30

2nd speed rpm : 1210

travel mm : 7.40...7.60

3rd speed rpm : 650

travel mm : 5.20...5.80

4th speed rpm : 300

travel mm : 0.80...1.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 750

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 900

Del.quantity : 151.0...153.0

1000 : (149.0...155.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version  
Control lever  
position degrees: 40...48

Setting point:  
Speed rpm : 750  
Rack travel in mm : 15.5

Testing:  
1st rack travel in: 12.60  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1270...1300  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.7

Testing:  
Speed rpm : 100  
Minimum rack trave: 8.20  
Speed rpm : 300  
Rack travel in mm : 6.60...6.80  
Rack travel in mm : 2.00  
Speed rpm : 500...540

CONSTANT REGULATION  
Speed rpm : 320...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 710  
Rack travel mm : 13.00...13.10

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.80...11.90  
2nd pressure hPa : 530  
Rack travel in m: 12.20...12.50  
3rd pressure hPa : 900  
Rack travel in m: 13.60...13.70

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

G16

1st version  
Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm3/ : 147.5...150.5  
1000 s: (145.0...153.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 450  
Del.quantity cm3/ : 108.0...110.0  
1000 s: (106.0...112.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.60  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...150.0  
1000 s: (137.0...153.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.60...6.80  
Del.quantity cm3/ : 13.0...17.0  
1000 s: (11.0...19.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 e  
 Edition : 01.09.88  
 Replaces : 8.1.88  
 Test oil : ISO-4113  
 Combination no. : 9 400 085 288  
 Injection pump  
 Pump designation : PES6A90D410RS2596-1  
 EP type number : 9 400 084 008  
 Governor  
 Governor design. : RQV300...1300AB1066-3L  
 Governor no. : 9 420 080 230  
 Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 366 A

1st version kW : 127.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.10...13.20

Del. quantity cm<sup>3</sup>/ : 8.6...8.7

100 s : (8.4...8.9)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 8.4...8.6

Del. quantity cm<sup>3</sup>/ : 1.0...1.4

100 s : (0.8...1.6)

Spread cm<sup>3</sup> : 0.2

100 s : (0.4)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1375

travel mm : 8.40...8.50

2nd speed rpm : 300

travel mm : 0.90...1.30

3rd speed rpm : 500

travel mm : 2.20...2.60

4th speed rpm : 800

travel mm : 4.30...4.70

5th speed rpm : 1100

travel mm : 6.10...6.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1375

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del. quantity : 86.0...87.0

1000 : (84.0...89.0)



Spread cm<sup>3</sup> : 3.00  
1000 : (5.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 60...68

#### Testing:

1st rack travel in: 12.10  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1470...1500  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 19...27

#### Testing:

Speed rpm : 100  
Minimum rack travel: 10.00  
Speed rpm : 300  
Rack travel in mm : 8.40...8.60  
Rack travel in mm : 2.00  
Speed rpm : 570...630

#### CONSTANT REGULATION

Speed rpm : 590...660

#### TORQUE CONTROL

Dimension a mm : 1.00  
Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 13.10...13.20  
2nd speed rpm : 800  
Rack travel in m: 14.10...14.20  
3rd speed rpm : 1000  
Rack travel in m: 13.90...14.10  
4th speed rpm : 1150  
Rack travel in m: 13.30...13.60

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 14.10...14.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.80...12.90  
2nd pressure hPa : 750

Rack travel in m: 13.90...14.00  
3rd pressure hPa : 650  
Rack travel in m: 13.20...13.40

#### START CUT-OUT

Speed 1/min : 240 (260)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 89.0...91.0  
1000 s: (86.5...93.5)  
Aneroid pressure h: 1000  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 90.0...92.0  
1000 s: (87.5...94.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 66.5...68.5  
1000 s: (64.5...70.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.10  
Speed rpm : 1340...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 71.0...81.0  
1000 s: (68.0...84.0)  
Rack travel in mm : 14.70...15.70

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 10,0q11  
Edition : 02.05.89  
Replaces : 1.9.88  
Test oil : ISO-4113

Combination no. : 9 400 087 295

Injection pump  
Pump designation : PE6P110A32ORS3108Y  
EP type number : 0 411 816 729  
Governor  
Governor design. : RQV250...1100PA589-1  
Governor no. : 9 420 080 166

Customer-spec. information  
Customer : VOLVO

Engine : THD 100 EC

1st version kW : 180.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
: (2.95...3.15)  
Rack travel in mm : 9.00...12.00

G19

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.10...11.20

Del.quantity cm<sup>3</sup>/ : 13.8...14.0

100 s: (13.5...14.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 5.0...5.2

Del.quantity cm<sup>3</sup>/ : 3.0...3.4

100 s: (2.7...3.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.20...1.30

2nd speed rpm : 370  
travel mm : 2.60...3.00

3rd speed rpm : 430  
travel mm : 3.50...3.90

4th speed rpm : 1160  
travel mm : 8.10...8.30

5th speed rpm : 1210  
travel mm : 9.40...9.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1180

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 138.0...140.0

1000 : (135.0...143.0)

Spread cm3 : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version

Control lever  
position degrees: 61...69

Testing:

1st rack travel in: 10.10  
Speed rpm : 1160...1170  
2nd rack travel in: 4.00  
Speed rpm : 1225...1255  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 8...16

Testing:

Speed rpm : 100  
Minimum rack travel: 6.70  
Speed rpm : 250  
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

Speed rpm : 250...425

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 11.10...11.20

Measurement

Speed 1/min : 500  
Rack travel in m: 9.60...9.80  
2nd pressure hPa : 275  
Rack travel in m: 9.90...10.00  
3rd pressure hPa : 400  
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del. quantity cm3/ : 105.5...108.5  
1000 s: (103.0...111.0)

BREAKAWAY

G20

1st version  
1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 170.0...200.0  
1000 s: (166.0...204.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.00...5.20  
Del. quantity cm3/ : 30.0...34.0  
1000 s: (27.5...36.5)  
Spread cm3 : 3.00  
1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 10,0 e 2  
Edition : 02.05.89  
Replaces : 11.8.87  
Test oil : ISO-4113

Combination no. : 9 400 087 308

Injection pump  
Pump designation : PE5P110A720RS479  
EP type number : 9 400 087 040  
Governor  
Governor design. : RQ300/1050PA718-1  
Governor no. : 9 420 080 187

Customer-spec. information  
Customer : DAIMLER-BENZ BRASIL

Engine : OM355-5 A

1st version kW : 170.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 004

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.35...3.45  
: (3.30...3.50)  
Rack travel in mm : 9.00...12.00

G21

Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.20...12.30

Del.quantity cm<sup>3</sup>/ : 16.1...16.3

100 s: (15.8...16.6)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm<sup>3</sup>/ : 1.1...1.6

100 s: (-)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del.quantity : 161.0...163.0

1000 : (158.0...166.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.20

Speed rpm : 1095...1110

2nd rack travel in: 4.00

Speed rpm : 1150...1180

4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.50  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 375...415

#### TORQUE CONTROL

Dimension a mm : 0.35  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 600  
Rack travel in m: 13.10...13.20  
3rd speed rpm : 900  
Rack travel in m: 12.70...13.00

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 13.10...13.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.30...10.40  
2nd pressure hPa : 400  
Rack travel in m: 12.40...12.50  
3rd pressure hPa : 250  
Rack travel in m: 11.10...11.30

#### START CUT-OUT

Speed 1/min : 230 (270)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 177.0...181.0  
1000 s: (174.0...184.0)

Aneroid pressure h: 700  
Speed rpm : 900

Del.quantity cm<sup>3</sup>/ : 174.0...178.0  
1000 s: (171.0...181.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 112.5...115.5  
1000 s: (110.0...118.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1095...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (-)  
Rack travel in mm : 13.30...14.30

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 7,8 c  
 Edition : 02.05.89  
 Replaces : 12.11.87  
 Test oil : ISO-4113

Combination no. : 9 400 087 376

Injection pump  
 Pump designation : PES6P110A720RS3193  
 EP type number : 9 400 087 057  
 Governor  
 Governor design. : RSV650...1250P8A528  
 Governor no. : 9 420 082 323

Customer-spec. information  
 Customer : FORD FNH

Engine : 7.8 L

1st version kW : 140.0  
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 9 401 087 214

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35  
 : (4.20...4.30)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.20...13.30

Del. quantity cm<sup>3</sup>/ : 13.2...13.4

100 s: (13.0...13.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 650.0

Rack travel in mm : 5.9...6.1

Del. quantity cm<sup>3</sup>/ : 0.8...1.2

100 s: (0.5...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del. quantity : 132.0...134.0

1000 : (130.0...136.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 49...57

Testing:

1st rack travel in: 12.20

Speed rpm : 1260...1270  
2nd rack travel in: 4.00  
Speed rpm : 1300...1320  
4th rack travel in: 1400  
Speed rpm : 0.30...1.70

Combine-harvester

#### LOW IDLE 1

Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 650  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 600  
Minimum rack travel: 10.00  
Speed rpm : 650  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 685...745

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 110.0...114.0  
1000 s: (108.0...116.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 12.20  
Speed rpm : 1260...1270

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (131.0...159.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 650  
Rack travel in mm : 5.90...6.10  
Del.quantity cm<sup>3</sup>/ : 8.0...12.0  
1000 s: (5.5...15.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

#### APPLICATION

G24

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FOR 7,8 c 1  
 Edition : 02.05.89  
 Replaces : 1.9.88  
 Test oil : ISO-4113

Combination no. : 9 400 087 377

Injection pump  
 Pump designation : PES6P110A72ORS3193  
 EP type number : 9 400 087 057  
 Governor  
 Governor design. : RSV650...1250P8A530-  
 1  
 Governor no. : 9 420 082 324

Customer-spec. information  
 Customer : FORD - FNH

Engine : 7.8 l

1st version kW : 165.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35  
 : (4.20...4.40)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
 & maximum rack tra: 21.00  
 Difference, CS : 2.00...3.00

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.50...13.60

Del. quantity cm<sup>3</sup>/ : 13.7...13.9

100 s: (13.5...14.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 650.0

Rack travel in mm : 5.9...6.1

Del. quantity cm<sup>3</sup>/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 1000

Del. quantity : 137.0...139.0

1000 : (135.0...141.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)



## RATED SPEED

1st version

Control lever

position degrees: 48...56

Testing:

1st rack travel in: 12.50

Speed rpm : 1260...1270

2nd rack travel in: 4.00

Speed rpm : 1300...1320

4th rack travel in: 1400

Speed rpm : 0.30...1.70

## LOW IDLE 1

Control lever

position degrees: 23...31

Setting point w/out bumper spring

Speed rpm : 650

Rack travel in mm : 6.0

Testing:

Speed rpm : 600

Minimum rack travel: 10.00

Speed rpm : 650

Rack travel in mm : 5.40...5.60

Rack travel in mm : 2.00

Speed rpm : 685...745

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 1200

Pressure hPa : 1000

Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 1200

1st pressure hPa : -

Rack travel in m: 9.90...10.00

2nd pressure hPa : 600

Rack travel in m: 12.50...12.60

3rd pressure hPa : 400

Rack travel in m: 10.50...10.70

## FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 800

Del.quantity cm<sup>3</sup>/ : 117.5...119.5

1000 s: (115.5...121.5)

Aneroid pressure h: -

Speed rpm : 1200

Del.quantity cm<sup>3</sup>/ : 79.0...81.0

1000 s: (77.0...83.0)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50

Speed rpm : 1260...1270

## STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 135.0...155.0

1000 s: (131.0...159.0)

Rack travel in mm : 20.00...21.00

## LOW IDLE

Speed rpm : 650

Rack travel in mm : 5.90...6.10

Del.quantity cm<sup>3</sup>/ : 11.0...15.0

1000 s: (8.5...17.5)

Spread cm<sup>3</sup> : 3.50

1000 s: (5.50)

Remarks:

APPLICATION

Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 7,8 c 2  
 Edition : 02.05.89  
 Replaces : 1.9.88  
 Test oil : ISO-4113

Combination no. : 9 400 087 378

Injection pump  
 Pump designation : PES6P110A72ORS3193  
 EP type number : 9 400 087 057  
 Governor  
 Governor design. : RSV650...1250P8A530  
 Governor no. : 9 420 082 325

Customer-spec. information  
 Customer : FORD -FNH

Engine : 7.8 L

1st version kW : 180.0  
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 682 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35  
 : (4.20...4.40)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
 & maximum rack tra: 21.00  
 Difference, CS : 2.00...3.00

BASIC SETTING

1st speed rpm : 1200

---

Rack travel in mm : 14.60...14.70

---

Del.quantity cm<sup>3</sup>/ : 15.5...15.7

---

100 s: (15.3...15.9)

---

Spread cm<sup>3</sup> : 0.5

---

100 s: (0.9)

---

2nd speed rpm : 650.0  
 Rack travel in mm : 5.9...6.1  
 Del.quantity cm<sup>3</sup>/ : 1.1...1.5  
 100 s: (0.8...1.7)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
 Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1200  
 Aneroid pressure h: 1000  
 Del.quantity : 155.0...157.0  
 1000 : (153.0...159.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
Control lever  
position degrees: 48...56

Testing:  
1st rack travel in: 13.60  
Speed rpm : 1260...1270  
2nd rack travel in: 4.00  
Speed rpm : 1305...1325  
4th rack travel in: 1400  
Speed rpm : 0.30...1.70

LOW IDLE 1  
Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 650  
Rack travel in mm : 6.0

Testing:  
Speed rpm : 600  
Minimum rack travel: 10.00  
Speed rpm : 650  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 685...745

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1200  
Pressure hPa : 1000  
Rack travel mm : 14.60...14.70

Measurement  
Speed 1/min : 1200

1st pressure hPa : -  
Rack travel in m: 11.50...11.60  
2nd pressure hPa : 600  
Rack travel in m: 14.00...14.10  
3rd pressure hPa : 400  
Rack travel in m: 12.40...12.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 800  
Del.quantity cm3/ : 131.0...135.0  
1000 s: (129.0...137.0)  
Aneroid pressure h: -  
Speed rpm : 1200  
Del.quantity cm3/ : 107.0...109.0  
1000 s: (105.0...111.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.60  
Speed rpm : 1260...1270

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (131.0...159.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 650  
Rack travel in mm : 5.90...6.10  
Del.quantity cm3/ : 11.0...15.0  
1000 s: (8.5...17.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

#### APPLICATION

Combine-harvester

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FOR 7,8 d  
 Edition : 02.05.89  
 Replaces : 1.9.88  
 Test oil : ISO-4113  
  
 Combination no. : 9 400 087 379  
  
 Injection pump  
 Pump designation : PES6P110A72ORS3150  
 EP type number : 9 400 087 046  
 Governor  
 Governor design. : RQV350...1200PA863  
 Governor no. : 9 420 080 242

Customer-spec. information  
 Customer : FORD ( FNH )

Engine : 7.8 L TC

1st version kW : 138.0  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

H01

Prestroke mm : 4.25...4.35  
 : (4.20...4.40)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
 & maximum rack tra: 21.00  
 Difference, CS : 2.00...3.00

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.00...13.10

Del. quantity cm<sup>3</sup>/ : 12.7...12.9

100 s: (12.5...13.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 8.0...8.2

Del. quantity cm<sup>3</sup>/ : 2.3...2.7

100 s: (2.0...2.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1360

travel mm : 8.40...8.50

2nd speed rpm : 1000

travel mm : 5.50...5.90

3rd speed rpm : 800

travel mm : 4.40...4.80

4th speed rpm : 500

travel mm : 2.60...3.00

5th speed rpm : 300

travel mm : 0.90...1.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1440

Rack travel in mm : < 8.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200  
Aneroid pressure h: 600  
Del.quantity : 127.5...129.5  
1000 : (125.5...131.5)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 42...50

Testing:

1st rack travel in: 12.00  
Speed rpm : 1260...1270  
2nd rack travel in: 4.00  
Speed rpm : 1385...1415  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 13...21

Testing:

Speed rpm : 100  
Minimum rack trave: 12.00  
Speed rpm : 350  
Rack travel in mm : 8.00...8.20

CONSTANT REGULATION

Speed rpm : 390...460

TORQUE CONTROL

Dimension a mm : 0.80  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 13.00...13.10  
2nd speed rpm : 750  
Rack travel in m: 13.80...13.90  
3rd speed rpm : 900  
Rack travel in m: 13.70...13.90  
4th speed rpm : 1100  
Rack travel in m: 13.00...13.10

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 600  
Rack travel mm : 13.80...13.90

H02

Measurement

Speed 1/min : 500  
1st pressure hPa : -  
Rack travel in m: 12.20...12.30  
2nd pressure hPa : 267  
Rack travel in m: 12.60...12.70  
3rd pressure hPa : 335  
Rack travel in m: 13.30...13.50

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 600  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 115.0...119.0  
1000 s: (113.0...121.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 74.5...76.5  
1000 s: (72.5...78.5)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 12.00  
Speed rpm : 1260...1270

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 8.00...8.20  
Del.quantity cm<sup>3</sup>/ : 23.0...27.0  
1000 s: (20.5...29.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:  
Set shutoff stop 1.5...2.0 mm before  
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 7,8 e  
 Edition : 02.05.89  
 Replaces : 1.9.88  
 Test oil : ISO-4113

Combination no. : 9 400 087 380

Injection pump  
 Pump designation : PES6P110A720RS3151  
 EP type number : 9 400 087 047  
 Governor  
 Governor design. : RQV350...1200PA863-1  
 Governor no. : 9 420 080 243

Customer-spec. information  
 Customer : FORD ( FNH )

Engine : 7.8 L TC

1st version kW : 157.0  
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

H03

Prestroke mm : 4.25...4.35  
 : (4.20...4.40)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
 & maximum rack tra: 21.00  
 Difference, CS : 2.00...3.00

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.30...13.40

Del. quantity cm<sup>3</sup>/ : 13.2...13.4

100 s: (13.0...13.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 8.0...8.2

Del. quantity cm<sup>3</sup>/ : 2.6...3.0

100 s: (2.3...3.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1360  
 travel mm : 8.40...8.50

2nd speed rpm : 1000  
 travel mm : 5.50...5.90

3rd speed rpm : 800  
 travel mm : 4.40...4.80

4th speed rpm : 500  
 travel mm : 2.60...3.00

5th speed rpm : 300  
 travel mm : 0.90...1.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1440

Rack travel in mm : < 8.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200  
Aneroid pressure h: 600  
Del.quantity : 132.0...134.0  
1000 : (130.0...136.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 43...51

Testing:

1st rack travel in: 12.30  
Speed rpm : 1260...1270  
2nd rack travel in: 4.00  
Speed rpm : 1390...1420  
4th rack travel in: 1520  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 13...21

Testing:

Speed rpm : 100  
Minimum rack trave: 12.00  
Speed rpm : 350  
Rack travel in mm : 8.00...8.20

CONSTANT REGULATION

Speed rpm : 390...460

TORQUE CONTROL

Dimension a mm : 0.70  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 13.30...13.40  
2nd speed rpm : 750  
Rack travel in m: 14.00...14.10  
3rd speed rpm : 900  
Rack travel in m: 13.90...14.10  
4th speed rpm : 1120  
Rack travel in m: 13.30...13.40

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 600  
Rack travel mm : 14.00...14.10

Measurement

Speed 1/min : 500  
1st pressure hPa : -  
Rack travel in m: 11.90...12.00  
2nd pressure hPa : 420  
Rack travel in m: 12.50...12.60  
3rd pressure hPa : 505  
Rack travel in m: 13.40...13.60

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 600  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 116.0...120.0  
1000 s: (114.0...122.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 70.0...72.0  
1000 s: (68.0...74.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 12.30  
Speed rpm : 1260...1270

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 8.00...8.20  
Del.quantity cm<sup>3</sup>/ : 26.0...30.0  
1000 s: (23.5...32.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

Set shutoff stop 1.5...2.0 mm before shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FOR 7,8 d 1  
 Edition : 02.05.89  
 Replaces : 1.9.88  
 Test oil : ISO-4113  
  
 Combination no. : 9 400 087 381  
  
 Injection pump  
 Pump designation : PES6P110A720RS3150  
 EP type number : 9 400 087 046  
 Governor  
 Governor design. : RQV350...1200PA863-3  
 Governor no. : 9 420 080 244

Customer-spec. information  
 Customer : FORD ( FNH )

Engine : 7.8 L TC

1st version kW : 160.0  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

H05

Prestroke mm : 4.25...4.35  
 : (4.20...4.40)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
 & maximum rack tra: 21.00  
 Difference , CS : 2.00...3.00

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.90...13.00

Del. quantity cm<sup>3</sup>/ : 12.5...12.7

100 s: (12.3...12.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 8.0...8.2

Del. quantity cm<sup>3</sup>/ : 2.3...2.7

100 s: (2.1...2.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1360

travel mm : 8.40...8.50

2nd speed rpm : 1000

travel mm : 5.50...5.90

3rd speed rpm : 800

travel mm : 4.40...4.80

4th speed rpm : 500

travel mm : 2.60...3.00

5th speed rpm : 300

travel mm : 0.90...1.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1440

Rack travel in mm : < 8.00



FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200  
Aneroid pressure h: 600  
Del. quantity : 125.5...127.5  
1000 : (123.5...129.5)  
Spread cm3 : 5.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever position degrees: 42...50

Testing:

1st rack travel in: 11.90  
Speed rpm : 1260...1270  
2nd rack travel in: 4.00  
Speed rpm : 1380...1410  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever position degrees: 13...21

Testing:

Speed rpm : 100  
Minimum rack trave: 12.00  
Speed rpm : 350  
Rack travel in mm : 8.00...8.20

CONSTANT REGULATION

Speed rpm : 390...460

TORQUE CONTROL

Dimension a mm : 1.10  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 12.90...13.00  
2nd speed rpm : 750  
Rack travel in m: 14.00...14.10  
3rd speed rpm : 870  
Rack travel in m: 13.90...14.10  
4th speed rpm : 1100  
Rack travel in m: 12.90...13.00

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 600  
Rack travel mm : 14.00...14.10

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.90...13.00  
2nd pressure hPa : 333  
Rack travel in m: 13.20...13.30  
3rd pressure hPa : 380  
Rack travel in m: 13.70...13.90

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 600  
Speed rpm : 750  
Del. quantity cm3/ : 117.0...121.0  
1000 s: (115.0...123.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm3/ : 84.0...86.0  
1000 s: (82.0...88.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.90  
Speed rpm : 1260...1270

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 150.0...170.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 8.00...8.20  
Del. quantity cm3/ : 23.0...27.0  
1000 s: (21.0...29.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 7,8 e 1  
 Edition : 02.05.89  
 Replaces : 1.9.88  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 382  
 Injection pump  
 Pump designation : PES6P110A720RS3151  
 EP type number : 9 400 087 047  
 Governor  
 Governor design. : RQV350...120CPA863-2  
 Governor no. : 9 420 080 245

Customer-spec. information  
 Customer : FORD ( FNH )

Engine : 7.8 L TC

1st version kw : 160.0  
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

H07

Prestroke mm : 4.25...4.35  
 : (4.20...4.40)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 5- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
 & maximum rack tra: 21.00  
 Difference, CS : 2.00...3.00

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.70...13.80

Del.quantity cm3/ : 13.6...13.8

100 s: (13.4...14.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 8.0...8.2

Del.quantity cm3/ : 2.4...2.8

100 s: (2.1...3.0)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1360  
 travel mm : 8.40...8.50

2nd speed rpm : 1000  
 travel mm : 5.50...5.90

3rd speed rpm : 800  
 travel mm : 4.40...4.80

4th speed rpm : 500  
 travel mm : 2.60...3.00

5th speed rpm : 300  
 travel mm : 0.90...1.30

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1440  
 Rack travel in mm : < 8.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200  
Aneroid pressure h: 600  
Del.quantity : 136.0...138.0  
1000 : (134.0...140.0)  
Spread cm3 : 5.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 43...51

Testing:

1st rack travel in: 12.70  
Speed rpm : 1260...1270  
2nd rack travel in: 4.00  
Speed rpm : 1400...1430  
4th rack travel in: 1530  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 13...21

Testing:

Speed rpm : 100  
Minimum rack trave: 12.00  
Speed rpm : 350  
Rack travel in mm : 8.00...8.20

CONSTANT REGULATION

Speed rpm : 390...460

TORQUE CONTROL

Dimension a mm : 0.60  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 13.70...13.80  
2nd speed rpm : 750  
Rack travel in m: 14.30...14.40  
3rd speed rpm : 910  
Rack travel in m: 14.20...14.40  
4th speed rpm : 1040  
Rack travel in m: 13.70...13.80

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 600  
Rack travel mm : 14.30...14.40

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.40...12.50  
2nd pressure hPa : 345  
Rack travel in m: 12.90...13.00  
3rd pressure hPa : 420  
Rack travel in m: 13.60...13.80

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 600  
Speed rpm : 750  
Del.quantity cm3/ : 119.0...123.0  
1000 s: (117.0...125.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 76.5...78.5  
1000 s: (74.5...80.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70  
Speed rpm : 1260...1270

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (-)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 8.00...8.20  
Del.quantity cm3/ : 24.0...28.0  
1000 s: (21.5...30.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

Set shutoff stop 1.5...2.0 mm before  
shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FOR 7,8 e 2  
Edition : 02.05.89  
Replaces : 1.9.88  
Test oil : ISO-4113  
  
Combination no. : 9 400 087 383  
  
Injection pump  
Pump designation : PES6P110A72ORS3151  
EP type number : 9 400 087 047  
Governor  
Governor design. : RQV350...1200PA863-4  
Governor no. : 9 420 080 246

Customer-spec. information  
Customer : FORD ( FNH )

Engine : 7.8 L TC

1st version kW : 179.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35  
                  : (4.20...4.40)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference, CS : 2.00...3.00

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 14.50...14.60

Del.quantity cm<sup>3</sup>/ : 14.9...15.1

100 s: (14.7...15.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 8.0...8.2

Del.quantity cm<sup>3</sup>/ : 2.4...2.8

100 s: (2.1...3.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1360

travel mm : 8.40...8.50

2nd speed rpm : 1000

travel mm : 5.50...5.90

3rd speed rpm : 800

travel mm : 4.40...4.80

4th speed rpm : 500

travel mm : 2.60...3.00

5th speed rpm : 300

travel mm : 0.90...1.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1440

Rack travel in mm : < 8.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200  
Aneroid pressure h: 700  
Del.quantity : 149.5...151.5  
1000 : (147.5...153.5)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 44...52

Testing:

1st rack travel in: 13.50  
Speed rpm : 1260...1270  
2nd rack travel in: 4.00  
Speed rpm : 1410...1440  
4th rack travel in: 1520  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 13...21

Testing:

Speed rpm : 100  
Minimum rack trave: 12.00  
Speed rpm : 350  
Rack travel in mm : 8.00...8.20

CONSTANT REGULATION

Speed rpm : 390...460

TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 14.50...14.60  
2nd speed rpm : 750  
Rack travel in m: 15.00...15.10  
3rd speed rpm : 910  
Rack travel in m: 14.90...15.10  
4th speed rpm : 1040  
Rack travel in m: 14.50...14.60

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.10...12.20  
2nd pressure hPa : 430  
Rack travel in m: 13.30...13.40  
3rd pressure hPa : 532  
Rack travel in m: 14.30...14.50

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 128.0...132.0  
1000 s: (126.0...134.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 72.0...74.0  
1000 s: (70.0...76.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.50  
Speed rpm : 1260...1270

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 8.00...8.20  
Del.quantity cm<sup>3</sup>/ : 24.0...28.0  
1000 s: (21.5...30.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CAT 10,5 g4  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 384  
 Injection pump  
 Pump designation : PES6P100A720LS502  
 EP type number : 9 400 087 050  
 Governor  
 Governor design. : RQV350...1000PA828-2  
 Governor no. : 9 420 080 247

Customer-spec. information  
 Customer : CATERPILLAR

Engine : 3306 DIT.

1st version kW : 140.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 9 401 087 348

Inlet press., bar : 2.00

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 2...3

Prestroke mm : 3.95...4.05  
 : (3.90...4.10)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.60...10.70

Del. quantity cm<sup>3</sup>/ : 12.2...12.4

100 s: (12.0...12.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del. quantity cm<sup>3</sup>/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1055  
 travel mm : 8.50...8.60

2nd speed rpm : 300  
 travel mm : 1.10...1.40

3rd speed rpm : 500  
 travel mm : 3.40...3.70

4th speed rpm : 700  
 travel mm : 5.20...5.50

5th speed rpm : 900  
 travel mm : 6.80...7.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1055  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Aneroid pressure h: 500

Del.quantity : 122.0...124.0  
1000 : (120.0...126.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 64...72

#### Testing:

1st rack travel in: 9.70  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1120...1150  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...81

#### Testing:

Speed rpm : 100  
Minimum rack trave: 8.50  
Speed rpm : 350  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 500...560

#### CONSTANT REGULATION

Speed rpm : 370...440

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 500  
Rack travel mm : 10.60...10.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.00...9.20  
2nd pressure hPa : 145  
Rack travel in m: 10.30...10.40  
3rd pressure hPa : 75  
Rack travel in m: 9.50...9.70

#### START CUT-OUT

Speed 1/min : 290 (310)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 500  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 122.0...126.0  
1000 s: (120.0...128.0)  
Aneroid pressure h: -  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 94.0...96.0  
1000 s: (92.0...98.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.70  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 157.0...177.0  
1000 s: (153.0...181.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.90...5.10

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 10,0 t  
Edition : 02.05.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 9 400 087 391  
  
Injection pump  
Pump designation : PE6P110A720RS518  
EP type number : 9 400 087 064  
Governor  
Governor design. : RQ300/1000PA718-1  
Governor no. : 9 420 080 255

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 355 LA

1st version kW : 250.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 004

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.35...3.45  
                  : (3.30...3.50)

Rack travel in mm : 9.00...12.00

H13

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.10...13.20

Del. quantity cm<sup>3</sup>/ : 20.3...20.5

100 s: (20.1...20.8)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 5.4...5.6

Del. quantity cm<sup>3</sup>/ : 1.1...1.7

100 s: (0.9...1.8)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del. quantity : 203.5...205.5

1000 : (201.0...208.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.10

Speed rpm : 1045...1060

2nd rack travel in: 4.00

Speed rpm : 1110...1140



4th rack travel in: 1220  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.5

Testing:  
Speed rpm : 100  
Minimum rack trave: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 380...420

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 13.10...13.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.30...9.40  
2nd pressure hPa : 610  
Rack travel in m: 12.10...12.20  
3rd pressure hPa : 290  
Rack travel in m: 10.10...10.30

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm3/ : 199.5...203.5  
1000 s: (196.5...206.5)  
Spread cm3 : 6.00  
1000 s: (9.00)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 118.0...120.0  
1000 s: (115.0...123.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

BREAKAWAY

H14

1st version  
1mm rack travel less than

full load rack tr: 12.10  
Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...240.0  
1000 s: (116.0...244.0)  
Rack travel in mm : 15.50...16.50

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SCA 11,1 b1  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 393  
 Injection pump  
 Pump designation : PE6P120A72ORS7126  
 EP type number : 0 412 626 815  
 Governor  
 Governor design. : RQV200...1000PA725-1  
 Governor no. : 0 421 813 552

Customer-spec. information  
 Customer : SAAB SCANIA

Engine : DSC 11 - 18

1st version kW : 265.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.10...14.20

Del. quantity cm<sup>3</sup>/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 225.0

Rack travel in mm : 4.5...4.9

Del. quantity cm<sup>3</sup>/ : 1.5...1.9

100 s: (-)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 225  
 travel mm : 1.20...1.60

2nd speed rpm : 350  
 travel mm : 2.40...3.00

3rd speed rpm : 650  
 travel mm : 4.40...5.00

4th speed rpm : 1045  
 travel mm : 8.40...8.60

5th speed rpm : 1160  
 travel mm : 9.90...10.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1040

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 234.0...236.0  
1000 : (231.0...239.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 59...67

Testing:  
1st rack travel in: 13.10  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1145...1175  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 7...15

Testing:  
Speed rpm : 100  
Minimum rack trave: 6.10  
Speed rpm : 225  
Rack travel in mm : 4.50...4.70  
Rack travel in mm : 2.00  
Speed rpm : 340...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 14.10...14.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.50...10.90  
2nd pressure hPa : 575  
Rack travel in m: 13.00...13.10  
3rd pressure hPa : 405  
Rack travel in m: 11.10...11.30

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 223.0...231.0  
1000 s: (221.0...233.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 150.0...154.0  
1000 s: (148.0...156.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.10  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 275.0...-325.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 225  
Rack travel in mm : 4.50...4.70

Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 10,0 e 3  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 394  
 Injection pump  
 Pump designation : PE5P110A72ORS479  
 EP type number : 9 400 087 040  
 Governor  
 Governor design. : RQ300/1050PA718-1  
 Governor no. : 9 420 080 187

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM355-5 A

1st version kW : 170.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 004

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.35...3.45  
 : (3.30...3.50)

Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.20...12.30

Del.quantity cm<sup>3</sup>/ : 16.1...16.3

100 s: (15.8...16.6)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm<sup>3</sup>/ : 1.1...1.6

100 s: (-)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del.quantity : 161.0...163.0

1000 : (158.0...166.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.20

Speed rpm : 1095...1110

2nd rack travel in: 4.00

Speed rpm : 1150...1180

4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 8.50  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 375...415

#### TORQUE CONTROL

Dimension a mm : 0.35  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 600  
Rack travel in m: 13.10...13.20  
3rd speed rpm : 900  
Rack travel in m: 12.70...13.00

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 13.10...13.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.30...10.40  
2nd pressure hPa : 400  
Rack travel in m: 12.40...12.50  
3rd pressure hPa : 250  
Rack travel in m: 11.10...11.30

#### START CUT-OUT

Speed 1/min : 230 (270)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm3/ : 177.0...181.0  
1000 s: (174.0...184.0)  
Aneroid pressure h: 700  
Speed rpm : 900

Del.quantity cm3/ : 174.0...178.0  
1000 s: (171.0...181.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 112.5...115.5  
1000 s: (110.0...118.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1095...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (-)  
Rack travel in mm : 13.30...14.30

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CAT 7,0 d 3  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 395  
 Injection pump  
 Pump designation : PES4P100A720LS504  
 EP type number : 9 400 087 052  
 Governor  
 Governor design. : RQV350...1100PA798-3  
 Governor no. : 9 420 080 227

Customer-spec. information  
 Customer : CATERPILLAR

Engine : 3304 DINA

1st version kW : 78.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 9 401 087 214

Inlet press., bar : 2.00

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 2...3

Prestroke mm : 3.95...4.05  
 : (3.90...4.10)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.10...10.20

Del. quantity cm<sup>3</sup>/ : 8.9...9.0

100 s: (8.7...9.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.8...7.0

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (1.0...1.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1150

travel mm : 8.50...8.60

2nd speed rpm : 350

travel mm : 1.30...1.70

3rd speed rpm : 450

travel mm : 3.20...3.50

4th speed rpm : 600

travel mm : 4.40...4.70

5th speed rpm : 1000

travel mm : 7.00...7.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 86.0...87.0  
1000 : (83.5...89.5)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 63...71

#### Testing:

1st rack travel in: 9.10  
Speed rpm : 1130...1140  
2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1320  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18

#### Testing:

Speed rpm : 100  
Minimum rack travel: 9.50  
Speed rpm : 350  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 460...520

#### CONSTANT REGULATION

Speed rpm : 320...390

#### START CUT-OUT

Speed 1/min : 290 (310)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 84.5...88.5  
1000 s: (82.5...90.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 8.70  
Speed rpm : 1130...1140

#### STARTING FUEL DELIVERY

Speed rpm : 100

H2O

Del.quantity cm<sup>3</sup>/ : 165.0...185.0  
1000 s: (161.0...189.0)

Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.10...5.30

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAT 7,0 d 4  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 397  
 Injection pump  
 Pump designation : PES4P100A720LS504  
 EP type number : 9 400 087 052  
 Governor  
 Governor design. : RGV350...950PA798-4  
 Governor no. : 9 420 080 228

Customer-spec. information  
 Customer : CATERPILLAR

Engine : 3304 DINA

1st version kW : 66.0  
 Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 9 401 087 214

Inlet press., bar : 2.00

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 2...3

Prestroke mm : 3.95...4.05  
 : (3.90...4.10)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 8.90...9.00

Del.quantity cm<sup>3</sup>/ : 7.9...8.0

100 s: (7.6...8.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.5...6.7

Del.quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (1.0...1.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1050

travel mm : 8.50...8.60

2nd speed rpm : 350

travel mm : 1.30...1.70

3rd speed rpm : 500

travel mm : 3.30...3.60

4th speed rpm : 700

travel mm : 5.10...5.40

5th speed rpm : 900

travel mm : 6.80...7.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1050

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950



Del.quantity : 79.0...80.0  
1000 : (76.5...82.5)  
Spread cm3 : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 60...68

Testing:  
1st rack travel in: 7.90  
Speed rpm : 980...990  
2nd rack travel in: 4.00  
Speed rpm : 1025...1055  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18

Testing:  
Speed rpm : 100  
Minimum rack trave: 8.50  
Speed rpm : 350  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 490...550

#### CONSTANT REGULATION

Speed rpm : 320...390

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 8.90...9.00  
2nd speed rpm : 600  
Rack travel in m: 9.40...9.50  
3rd speed rpm : 750  
Rack travel in m: 9.10...9.30

#### START CUT-OUT

Speed 1/min : 290 (310)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm3/ : 75.5...79.5  
1000 s: (73.5...81.5)  
Speed rpm : 750  
Del.quantity cm3/ : 77.0...81.0  
1000 s: (75.0...83.0)

#### BREAKAWAY

H22

1st version  
1mm rack travel less than

full load rack tr: 7.90  
Speed rpm : 980...990

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 165.0...185.0  
1000 s: (161.0...189.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.10...5.30

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAT 7,0 d 5  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
  
 Combination no. : 9 400 087 398  
  
 Injection pump  
 Pump designation : PES4P100A720LS504  
 EP type number : 9 400 087 052  
 Governor  
 Governor design. : RQV350...1000PA798-5  
 Governor no. : 9 420 080 229

Customer-spec. information  
 Customer : CATERPILLAR

Engine : 3304 DINA

1st version kW : 66.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 9 401 087 214

Inlet press., bar : 2.00

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 2...3

Prestroke mm : 3.95...4.05  
 : (3.90...4.10)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 8.70...8.80

Del. quantity cm<sup>3</sup>/ : 7.4...7.5

100 s: (7.1...7.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.8...7.0

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (1.0...1.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1050

travel mm : 8.50...8.60

2nd speed rpm : 350

travel mm : 1.30...1.70

3rd speed rpm : 500

travel mm : 3.30...3.60

4th speed rpm : 700

travel mm : 5.10...5.40

5th speed rpm : 900

travel mm : 6.80...7.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1050

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 74.0...75.0  
1000 : (71.5...77.5)  
Spread cm3 : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

#### Testing:

1st rack travel in: 7.70  
Speed rpm : 1030...1040  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18

#### Testing:

Speed rpm : 100  
Minimum rack trave: 8.50  
Speed rpm : 350  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 490...550

#### CONSTANT REGULATION

Speed rpm : 320...390

#### TORQUE CONTROL

Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 8.70...8.80  
2nd speed rpm : 500  
Rack travel in m: 9.10...9.20  
3rd speed rpm : 800  
Rack travel in m: 8.90...9.10

#### START CUT-OUT

Speed 1/min : 290 (310)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 500  
Del.quantity cm3/ : 60.5...64.5  
1000 s: (58.5...66.5)  
Speed rpm : 800  
Del.quantity cm3/ : 72.0...76.0  
1000 s: (70.0...78.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 7.70  
Speed rpm : 1030...1040

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 165.0...185.0  
1000 s: (161.0...189.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.10...5.30

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAT 10,5 g5  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 399  
 Injection pump  
 Pump designation : PES6P100A720LS502  
 EP type number : 9 400 087 050  
 Governor  
 Governor design. : RQV350...1100PA798-1  
 Governor no. : 9 420 080 222

Customer-spec. information  
 Customer : CATERPILLAR

Engine : 3306 DIT

1st version kW : 138.2  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 9 401 087 214

Inlet press., bar : 2.00

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 2...3

Prestroke mm : 3.95...4.05  
 : (3.90...4.10)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.60...9.70

Del. quantity cm<sup>3</sup>/ : 10.3...10.4

100 s: (10.1...10.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (1.0...1.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1150

travel mm : 8.50...8.60

2nd speed rpm : 350

travel mm : 1.30...1.50

3rd speed rpm : 500

travel mm : 2.90...3.20

4th speed rpm : 700

travel mm : 4.50...4.80

5th speed rpm : 900

travel mm : 6.00...6.20

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 103.5...104.5  
1000 : (101.0...107.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 60...68

#### Testing:

1st rack travel in: 8.60  
Speed rpm : 1130...1140  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1320  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 8...16

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 350  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 500...560

#### CONSTANT REGULATION

Speed rpm : 370...440

#### START CUT-OUT

Speed 1/min : 290 (310)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 105.5...109.5  
1000 s: (103.5...111.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 8.60  
Speed rpm : 1130...1140

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 157.0...177.0  
1000 s: (153.0...181.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.90...5.10

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAT 10,5 g6  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
  
 Combination no. : 9 400 087 400  
  
 Injection pump  
 Pump designation : PES6P100A720LS502  
 EP type number : 9 400 087 050  
 Governor  
 Governor design. : RQV350...950PA798-2  
 Governor no. : 9 420 080 226

Customer-spec. information  
 Customer : CATERPILLAR

Engine : 3306 DIT

1st version kW : 104.0  
 Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 9 401 087 214

Inlet press., bar : 2.00

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 2...3

Prestroke mm : 3.95...4.05  
 : (3.90...4.10)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance ± %, : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 8.60...8.70

Del. quantity cm<sup>3</sup>/ : 8.7...8.8

100 s: (8.4...9.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.2...6.4

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (1.0...1.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1055

travel mm : 8.50...8.60

2nd speed rpm : 300

travel mm : 1.10...1.40

3rd speed rpm : 500

travel mm : 3.40...3.70

4th speed rpm : 700

travel mm : 5.20...5.50

5th speed rpm : 900

travel mm : 6.80...7.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1055

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Del.quantity : 87.0...88.0  
1000 : (84.5...90.5)  
Spread cm3 : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

Testing:  
1st rack travel in: 7.60  
Speed rpm : 980...990  
2nd rack travel in: 4.00  
Speed rpm : 1025...1055  
4th rack travel in: 1180  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.50  
Speed rpm : 350  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 480...540

#### CONSTANT REGULATION

Speed rpm : 330...400

#### TORQUE CONTROL

Dimension a mm : 0.70  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 8.60...8.70  
2nd speed rpm : 600  
Rack travel in m: 9.30...9.40  
3rd speed rpm : 800  
Rack travel in m: 9.00...9.20

#### START CUT-OUT

Speed 1/min : 290 (310)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm3/ : 100.0...104.0  
1000 s: (98.0...106.0)  
Speed rpm : 800  
Del.quantity cm3/ : 92.0...96.0  
1000 s: (90.0...98.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 7.60  
Speed rpm : 980...990

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 157.0...177.0  
1000 s: (153.0...181.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.90...5.10

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CAT 7,0 g 2  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 401  
 Injection pump  
 Pump designation : PES4P100A720LS501  
 EP type number : 9 400 087 051  
 Governor  
 Governor design. : RQV350...1100PA798-1  
 Governor no. : 9 420 080 222

Customer-spec. information  
 Customer : CATERPILLAR

Engine : 3304 DIT

1st version kW : 107.4  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 9 401 087 214

Inlet press., bar : 2.00

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 2...3

Prestroke mm : 3.95...4.05  
 : (3.90...4.10)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1-3- 4- 2

Phasing : 0-90-180-270

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 12.4...12.5

100 s: (12.1...12.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.2...6.4

Del.quantity cm3/ : 1.2...1.8

100 s: (1.0...1.9)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1150

travel mm : 8.50...8.60

2nd speed rpm : 350

travel mm : 1.30...1.50

3rd speed rpm : 500

travel mm : 2.90...3.20

4th speed rpm : 700

travel mm : 4.50...4.80

5th speed rpm : 900

travel mm : 6.00...6.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100



Del.quantity : 124.0...125.0  
1000 : (121.5...127.5)  
Spread cm3 : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 63...71

#### Testing:

1st rack travel in: 9.40  
Speed rpm : 1130...1140  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1320  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 8...16

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 350  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 500...560

#### CONSTANT REGULATION

Speed rpm : 370...440

#### START CUT-OUT

Speed 1/min : 290 (310)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 600  
Del.quantity cm3/ : 120.0...124.0  
1000 s: (118.0...126.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9.40  
Speed rpm : 1130...1140

#### STARTING FUEL DELIVERY

Speed rpm : 100

J02

Del.quantity cm3/ : 157.0...177.0  
1000 s: (153.0...181.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.90...5.10

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CAT 10,5 j1  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 402  
 Injection pump  
 Pump designation : PES6P100A720LS508  
 EP type number : 9 400 087 053  
 Governor  
 Governor design. : RQV350...875PA798-6  
 Governor no. : 9 420 080 236

Customer-spec. information  
 Customer : CATERPILLAR

Engine : 3306 DINA

1st version kW : 87.2  
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 9 401 087 348

Inlet press., bar : 2.00

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 2...3

Prestroke mm : 3.95...4.05  
 : (3.90...4.10)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 8.80...8.90

Del. quantity cm<sup>3</sup>/ : 7.1...7.3

100 s : (6.9...7.5)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.7...6.9

Del. quantity cm<sup>3</sup>/ : 0.9...1.5

100 s : (0.7...1.6)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 950  
 travel mm : 8.40...8.50

2nd speed rpm : 330  
 travel mm : 0.90...1.70

3rd speed rpm : 450  
 travel mm : 3.20...3.60

4th speed rpm : 650  
 travel mm : 5.10...5.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 950

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Del. quantity : 71.5...73.5

1000 : (69.5...75.5)

Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

Testing:  
1st rack travel in: 7.80  
Speed rpm : 910...920  
2nd rack travel in: 4.00  
Speed rpm : 950...980  
4th rack travel in: 1050  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 350  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 420...480

CONSTANT REGULATION  
Speed rpm : 350...420

TORQUE CONTROL  
Dimension a mm : 0.70  
Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 8.80...8.90  
2nd speed rpm : 600  
Rack travel in m: 9.50...8.60  
3rd speed rpm : 700  
Rack travel in m: 9.20...9.40  
4th speed rpm : 750  
Rack travel in m: 9.00...9.30

#### START CUT-OUT

Speed 1/min : 250 (270)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 70.0...74.0  
1000 s: (68.0...76.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 70.5...74.5  
1000 s: (68.5...76.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 7.80  
Speed rpm : 910...920

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 165.0...185.0  
1000 s: (161.0...189.0)  
Rack travel in mm : 14.00...15.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.10...5.30

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAT 10,5 i1  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 403  
 Injection pump  
 Pump designation : PES6P100A720LS511  
 EP type number : 9 400 087 059  
 Governor  
 Governor design. : RQV350/840...900PA  
 839  
 Govenner no. : 9 420 080 233

Customer-spec. information  
 Customer : CATERPILLAR

Engine : 3306 DIT

1st version kW : 190.0  
 Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 9 401 087 348

Inlet press., bar : 2.00

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 2...3

J05

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.80...12.90

Del.quantity cm<sup>3</sup>/ : 18.2...18.4

100 s: (18.0...18.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del.quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 950  
 travel mm : 8.50...8.60

2nd speed rpm : 350  
 travel mm : 0.50...1.50

3rd speed rpm : 500  
 travel mm : 2.40...2.60

4th speed rpm : 750  
 travel mm : 2.40...2.60

5th speed rpm : 850  
 travel mm : 4.00...4.50

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 925

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 900

Del.quantity : 182.5...184.5  
1000 : (180.0...187.0)  
Spread cm3 : 3.50  
1000 : (6.00)

APPLICATION

Generator

#### RATED SPEED

1st version  
Control lever  
position degrees: 57...65

#### Testing:

1st rack travel in: 11.80  
Speed rpm : 910...920  
2nd rack travel in: 4.00  
Speed rpm : 930...960  
4th rack travel in: 1050  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 5...13

#### Testing:

Speed rpm : 100  
Minimum rack trave: 7.00  
Speed rpm : 350  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 770...830

#### START CUT-OUT

Speed 1/min : 290 (310)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 910...920

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 195.0...215.0  
1000 s: (191.0...219.0)  
Rack travel in mm : 14.00...15.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.70...4.90

Remarks:

:

J06

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CAT 7,0 f 1  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 404  
 Injection pump  
 Pump designation : PES4P100A720LS510  
 EP type number : 9 400 087 058  
 Governor  
 Governor design. : RQV350/840...900PA  
 839  
 Governor no. : 9 420 080 233

Customer-spec. information  
 Customer : CATERPILLAR

Engine : 3304 DIT

1st version kW : 135.0  
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 9 401 087 348

Inlet press., bar : 2.00

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 2...3

J07

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.90...14.00

Del. quantity cm<sup>3</sup>/ : 20.3...20.5

100 s: (20.0...20.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 950

travel mm : 8.50...8.60

2nd speed rpm : 350

travel mm : 0.50...1.50

3rd speed rpm : 500

travel mm : 2.40...2.60

4th speed rpm : 750

travel mm : 2.40...2.60

5th speed rpm : 850

travel mm : 4.00...4.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 925

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 203.0...205.0  
1000 : (200.5...207.5)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

APPLICATION

Generator

RATED SPEED

1st version  
Control lever  
position degrees: 58...66

Testing:  
1st rack travel in: 12.90  
Speed rpm : 910...920  
2nd rack travel in: 4.00  
Speed rpm : 940...970  
4th rack travel in: 1050  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 5...13

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 350  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 770...830

START CUT-OUT

Speed 1/min : 290 (310)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.90  
Speed rpm : 910...920

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 195.0...215.0  
1000 s: (191.0...219.0)  
Rack travel in mm : 14.00...15.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.70...4.90

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CAT 7,0 g 3  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 405  
 Injection pump  
 Pump designation : PES4P100A720LS501  
 EP type number : 9 400 087 051  
 Governor  
 Governor design. : RQV350...1100PA828  
 Governor no. : 9 420 080 232

Customer-spec. information  
 Customer : CATERPILLAR

Engine : 3304 DIT

1st version kW : 103.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 9 401 087 348

Inlet press., bar : 2.00

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 2...3

Prestroke mm : 3.95...4.05  
 : (3.90...4.10)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.80...10.90

Del.quantity cm<sup>3</sup>/ : 13.0...13.2

100 s: (12.8...13.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del.quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.2...2.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1150  
 travel mm : 8.50...8.60

2nd speed rpm : 350  
 travel mm : 1.30...1.50

3rd speed rpm : 500  
 travel mm : 2.90...3.20

4th speed rpm : 700  
 travel mm : 4.50...4.80

5th speed rpm : 900  
 travel mm : 6.00...6.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 600



Del.quantity : 130.0...132.0  
1000 : (128.0...134.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

#### Testing:

1st rack travel in: 9.80  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1210...1240  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 9...17

#### Testing:

Speed rpm : 100  
Minimum rack trave: 8.00  
Speed rpm : 350  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 530...590

#### CONSTANT REGULATION

Speed rpm : 370...440

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 600  
Rack travel mm : 10.80...10.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.80...9.00  
2nd pressure hPa : 310  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : 210  
Rack travel in m: 9.30...9.50

#### START CUT-OUT

Speed 1/min : 290 (310)

#### FUEL DELIVERY CHARACTERISTICS

J10

1st version  
Aneroid pressure h: 600  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 123.0...127.0  
1000 s: (121.0...129.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)  
Aneroid pressure h: -  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 90.0...92.0  
1000 s: (88.0...94.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 157.0...177.0  
1000 s: (153.0...181.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.10...5.30

Remarks:  
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CAT 10,5 g5  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 406  
 Injection pump  
 Pump designation : PES6P100A720LS502  
 EP type number : 9 400 087 050  
 Governor  
 Governor design. : RQV350...1100PA828  
 Governor no. : 9 420 080 232

Customer-spec. information  
 Customer : CATERPILLAR

Engine : 3306 DITA

1st version kW : 191.5  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 9 401 087 348

Inlet press., bar : 2.00

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 2...3

Prestroke mm : 3.95...4.05  
 : (3.90...4.10)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.40...12.50

Del. quantity cm<sup>3</sup>/ : 14.7...14.9

100 s: (14.4...15.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (1.0...1.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1150  
 travel mm : 8.50...8.60

2nd speed rpm : 350  
 travel mm : 1.30...1.50

3rd speed rpm : 500  
 travel mm : 2.90...3.20

4th speed rpm : 700  
 travel mm : 4.50...4.80

5th speed rpm : 900  
 travel mm : 6.00...6.20

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1150  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 500

Del.quantity : 147.0...149.0  
1000 : (144.5...151.5)  
Spread cm3 : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 63...71

Testing:  
1st rack travel in: 11.40  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 9...17

Testing:  
Speed rpm : 100  
Minimum rack trave: 8.00  
Speed rpm : 350  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 530...590

CONSTANT REGULATION  
Speed rpm : 370...440

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 500  
Rack travel mm : 12.40...12.50

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...10.00  
2nd pressure hPa : 300  
Rack travel in m: 11.70...11.80  
3rd pressure hPa : 200  
Rack travel in m: 10.70...10.90

#### START CUT-OUT

Speed 1/min : 290 (310)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 500  
Speed rpm : 700  
Del.quantity cm3/ : 149.0...153.0  
1000 s: (147.0...155.0)  
Spread cm3 : 5.00  
1000 s: (7.00)  
Aneroid pressure h: -  
Speed rpm : 1100  
Del.quantity cm3/ : 108.0...110.0  
1000 s: (105.5...112.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.40  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 157.0...177.0  
1000 s: (153.0...181.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.00...5.20

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CAT 10,5 g8
Edition : 02.05.89
Replaces : -
Test oil : ISO-4113
Combination no. : 9 400 087 407
Injection pump
Pump designation : PES6P100A720LS502
EP type number : 9 400 087 050
Governor
Governor design. : RQV350...1100PA828-1
Governor no. : 9 420 080 235

Customer-spec. information
Customer : CATERPILLAR

Engine : 3306 DITA

1st version kW : 174.5
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 9 401 087 348

Inlet press., bar : 2.00

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 2...3

Prestroke mm : 3.95...4.05
: (3.90...4.10)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.90...13.00

Del.quantity cm3/ : 15.3...15.5

100 s: (15.1...15.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.2...1.8

100 s: (1.0...1.9)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1150

travel mm : 8.50...8.60

2nd speed rpm : 350

travel mm : 1.30...1.50

3rd speed rpm : 500

travel mm : 2.90...3.20

4th speed rpm : 700

travel mm : 4.50...4.80

5th speed rpm : 900

travel mm : 6.00...6.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 600

Del.quantity : 153.0...155.0  
1000 : (151.0...157.0)  
Spread cm3 : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 62...70

#### Testing:

1st rack travel in: 11.90  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1250...1280  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 9...17

#### Testing:

Speed rpm : 100  
Minimum rack trave: 8.00  
Speed rpm : 350  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 500...560

#### CONSTANT REGULATION

Speed rpm : 370...440

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 600  
Rack travel mm : 12.90...13.00

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...10.00  
2nd pressure hPa : 340  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 200  
Rack travel in m: 10.60...10.80

#### START CUT-OUT

Speed 1/min : 290 (310)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 600  
Speed rpm : 700  
Del.quantity cm3/ : 159.0...163.0  
1000 s: (157.0...165.0)  
Spread cm3 : 5.00  
1000 s: (7.00)  
Aneroid pressure h: -  
Speed rpm : 1100  
Del.quantity cm3/ : 108.0...110.0  
1000 s: (105.5...112.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.90  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 157.0...177.0  
1000 s: (153.0...181.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.90...5.10

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 10,0 s5  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 409  
 Injection pump  
 Pump designation : PE6P120A32ORS3186  
 EP type number : 0 411 826 756  
 Governor  
 Governor design. : RQV250...1025PA657-  
 27  
 Governor no. : 9 420 080 264

Customer-spec. information  
 Customer : VOLVO

Engine : TD102FS

1st version kW : 250.0  
 Rated speed : 2050

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70  
 : (2.55...2.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.10...12.20

Del. quantity cm<sup>3</sup>/ : 21.0...21.2

100 s: (20.7...21.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 3.9...4.1

Del. quantity cm<sup>3</sup>/ : 1.6...2.1

100 s: (1.3...2.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.10...1.30

2nd speed rpm : 500  
 travel mm : 4.10...4.90

3rd speed rpm : 700  
 travel mm : 6.30...6.70

4th speed rpm : 900  
 travel mm : 6.30...6.70

5th speed rpm : 1025  
 travel mm : 7.30...7.80

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1080  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700

Aneroid pressure h: 1000  
Del.quantity : 210.0...212.0  
1000 : (207.0...215.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 59...67

#### Testing:

1st rack travel in: 11.10  
Speed rpm : 1055...1065  
2nd rack travel in: 4.00  
Speed rpm : 1120...1150  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 4...12

#### Testing:

Speed rpm : 100  
Minimum rack trave: 5.40  
Speed rpm : 250  
Rack travel in mm : 3.90...4.10

#### CONSTANT REGULATION

Speed rpm : 250...350

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 12.10...12.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.70...8.90  
2nd pressure hPa : 130  
Rack travel in m: 9.10...9.20  
3rd pressure hPa : 530  
Rack travel in m: 11.60...11.80

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700

Del.quantity cm<sup>3</sup>/ : 146.0...148.0  
1000 s: (143.0...151.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.10  
Speed rpm : 1055...1065

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 3.90...4.10  
Del.quantity cm<sup>3</sup>/ : 16.0...21.0  
1000 s: (13.5...23.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

#### Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CAT 7,0 g 4  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 411  
 Injection pump  
 Pump designation : PES4P100A720LS501  
 EP type number : 9 400 087 051  
 Governor  
 Governor design. : RQV350...1100PA828-3  
 Governor no. : 9 420 080 266

Customer-spec. information  
 Customer : CATERPILLAR

Engine : 3304 DIT.

1st version kW : 103.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : ✓ 401 087 348

Inlet press., bar : 2.00

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 2...3

Prestroke mm : 3.95...4.05  
 : (3.90...4.10)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.10...11.20

Del.quantity cm<sup>3</sup>/ : 12.9...13.1

100 s: (12.7...13.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del.quantity cm<sup>3</sup>/ : 1.5...1.9

100 s: (1.2...2.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1150  
 travel mm : 8.50...8.60

2nd speed rpm : 350  
 travel mm : 1.30...1.50

3rd speed rpm : 500  
 travel mm : 2.90...3.20

4th speed rpm : 700  
 travel mm : 4.50...4.80

5th speed rpm : 900  
 travel mm : 6.00...6.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 500



Del.quantity : 129.0...131.0  
1000 : (127.0...133.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 62...70

#### Testing:

1st rack travel in: 10.10  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1215...1245  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 9...17

#### Testing:

Speed rpm : 100  
Minimum rack trave: 8.00  
Speed rpm : 350  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 530...590

#### CONSTANT REGULATION

Speed rpm : 370...440

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 500  
Rack travel mm : 11.10...11.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.00...8.20  
2nd pressure hPa : 290  
Rack travel in m: 10.20...10.30  
3rd pressure hPa : 125  
Rack travel in m: 8.80...9.00

#### START CUT-OUT

Speed 1/min : 290 (310)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 500  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 128.0...132.0  
1000 s: (126.0...134.0)  
Aneroid pressure h: -  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 81.0...83.0  
1000 s: (79.0...85.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 157.0...177.0  
1000 s: (153.0...181.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.10...5.30

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 10,0 f 2  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 413  
 Injection pump  
 Pump designation : PE5P100A72ORS491  
 EP type number : 9 400 087 044  
 Governor  
 Governor design. : RQ300/1100PA269-1  
 Governor no. : 0 421 801 237

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 355-5

1st version kW : 150.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C. : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del. quantity cm<sup>3</sup>/ : 12.5...12.7

100 s: (12.3...12.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.1...8.3

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.40...13.90

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 125.0...127.0

1000 : (123.0...129.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.6

Testing:

1st rack travel in: 11.70

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1190...1220

4th rack travel in: 1350

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 8.1

Testing:

Speed rpm : 100

Minimum rack trave: 9.70

Speed rpm : 300

Rack travel in mm : 8.00...8.20

Rack travel in mm : 2.00

Speed rpm : 375...415

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600

Del.quantity cm3/ : 117.0...121.0

1000 s: (114.5...123.5)

Spread cm3 : 5.00

1000 s: (7.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 150.0...170.0

1000 s: (146.0...174.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CAS 8,3 k 5  
 Edition : 16.6.89  
 Replaces : 6.7.88  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 005  
 Injection pump  
 Pump designation : PES6A95D420LS2551  
 Governor  
 Governor design. : RSV375...1050A2B2034  
 R

Customer-spec. information  
 Customer : CASE

Engine : A-504 BD

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : WS 187P

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 9 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 9 681 230 705

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2.20...2.30  
 : (2.15...2.35)  
 Rack travel in mm : 13.35  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - , : 0.50(0.75)

BASIC SETTING

1st speed rpm : 1050  
 Rack travel in mm : 13.35  
 Del. quantity cm<sup>3</sup>/ : 11.3...11.5  
 100 s : (-)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (-)  
 2nd speed rpm : 375  
 Rack travel in mm : 8.10  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s : (-)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Del. quantity : 113.0...115.0  
 1000 : (111.0...117.0)  
 Spread cm<sup>3</sup> : 3.0  
 1000 : (-)

RATED SPEED

1st version  
 Control lever  
 position degrees: 48...56

Testing:  
 1st rack travel in: 12.25  
 Speed rpm : 1090...1100  
 2nd rack travel in: 6.90  
 Speed rpm : 1170...1200  
 3rd rack travel in: 2.00  
 Speed rpm : 1205...1235

LOW IDLE 1

Control lever  
 position degrees: 27...35  
 Setting point w/out bumper spring  
 Speed rpm : 375  
 Rack travel in mm : 8.15

Testing:

Speed rpm : 150  
Minimum rack trave: 19.00  
Speed rpm : 375  
Rack travel in mm : 8.10...8.20  
Rack travel in mm : 3.00  
Speed rpm : 530...570

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 425  
Rack travel in m: 14.50...14.60

START CUT-OUT

Speed 1/min : 190

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800  
Del.quantity cm3/ : 113.0...117.0  
1000 s: (111.0...119.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.25  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1185  
Rack travel in mm : 6.80...7.00

LOW IDLE

Speed rpm : 375  
Del.quantity cm3/ : 16.0...22.0  
1000 s: (-)

Remarks:

: CASE NO. A-151333

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 c 4  
 Edition : 07.04.89  
 Replaces : 15.6.88  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 045  
 Injection pump  
 Pump designation : PES6A95D41ORS2522-1  
 EP type number : 9 410 230 017  
 Governor  
 Governor design. : RSV425...1100A2C2161  
 Governor no. : 9 420 234 140

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466T

1st version kW : 106.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness : 6.00X2.00X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 1.85...1.95  
 : (1.80...2.00)

Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.00...9.10

Del.quantity cm<sup>3</sup>/ : 8.6...8.8

100 s : (8.4...9.0)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.5...5.7

Del.quantity cm<sup>3</sup>/ : 1.8...2.2

100 s : (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 500

Del.quantity : 86.5...88.5

1000 : (84.0...90.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 46...54

Testing:

1st rack travel in: 8.00

Speed rpm : 1145...1155

2nd rack travel in: 4.00  
Speed rpm : 1185...1195  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 21...29  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 590...650

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 9.00...9.10  
2nd speed rpm : 650  
Rack travel in m: 10.40...10.60

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.20...10.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : 100  
Rack travel in m: 10.30...10.40  
2nd pressure hPa : 149  
Rack travel in m: 10.40...10.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 500  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 100.5...105.5  
1000 s: (98.5...108.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : -  
1000 s: (87.0...95.0)

#### BREAKAWAY

J24

1st version  
1mm rack travel less than

full load rack tr: 8.00  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 155.0...175.0  
1000 s: (150.0...180.0)  
Rack travel in mm : 19.00...21.00

#### HIGH IDLE

#### 1st version

Speed rpm : 1180  
Rack travel in mm : 5.30...5.50

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.50...5.70  
Del.quantity cm<sup>3</sup>/ : 18.0...22.0  
1000 s: (15.5...24.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

: JOHN DEERE # RE23750

Setting without torque-control spring  
retainer with 1 mm control-rod travel  
less. Raising of full-load delivery  
with torque-control spring retainer to  
9,0 mm control-rod travel.

Start-of-delivery mark 16, cam angle  
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 j 1  
 Edition : 07.04.89  
 Replaces : 14.1.88  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 046  
 Injection pump  
 Pump designation : PES6A95D410RS2561  
 EP type number : 9 410 230 006  
 Governor  
 Governor design. : RSV600...1100A2C2048  
 -1L  
 Govenor no. : 9 420 234 157

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466T

1st version kW : 110.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 413 385 007

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.35X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 1.85...1.95  
 : (1.80...2.00)

Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.90...10.00

Del.quantity cm3/ : 9.1...9.3

100 s : (8.9...9.5)

Spread cm3 : 0.3

100 s : (0.6)

2nd speed rpm : 600.0

Rack travel in mm : 5.0...5.2

Del.quantity cm3/ : 1.2...1.6

100 s : (0.9...1.8)

Spread cm3 : 0.3

100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 91.0...93.0

1000 : (89.0...95.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 8.90

Speed rpm : 1145...1155

2nd rack travel in: 4.00



Speed rpm : 1195...1225  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 24...32  
Setting point w/out bumper spring  
Speed rpm : 600  
Rack travel in mm : 4.6

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 600  
Rack travel in mm : 5.00...5.20  
Rack travel in mm : 2.00  
Speed rpm : 710...770

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 9.90...10.00  
2nd speed rpm : 950  
Rack travel in m: 10.70...10.90

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 104.0...108.0  
1000 s: (101.5...110.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than  
full load rack tr: 8.90  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 155.0...175.0  
1000 s: (150.0...180.0)  
Rack travel in mm : 19.00...21.00

#### HIGH IDLE

##### 1st version

Speed rpm : 1200  
Rack travel in mm : 4.70...4.90

#### LOW IDLE

Speed rpm : 600

J26

Rack travel in mm : 5.00...5.20  
Del.quantity cm<sup>3</sup>/ : 12.0...16.0  
1000 s: (9.5...18.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

: JOHN DEERE # RE10472

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark 10.5, cam angle  
after start of delivery cyl. 1

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : DEE 7,6 h  
 Edition : 07.04.89  
 Replaces : 15.6.88  
 Test oil : ISO-4113

Combination no. : 9 400 230 067

Injection pump  
 Pump designation : PES6A100D410RS2676  
 EP type number : 9 410 230 023  
 Governor  
 Governor design. : RSV425...1100A2C2161  
 -2L  
 Governor no. : 9 420 234 100

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466A

1st version kW : 141.0  
 Rated speed : 2200

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test Lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55  
 : (2.40...2.60)

Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1100

Rack travel in mm : 10.20...10.30

Del.quantity cm<sup>3</sup>/ : 11.1...11.3  
 100 s: (10.9...11.5)

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)

2nd speed rpm : 425.0  
 Rack travel in mm : 5.8...6.0  
 Del.quantity cm<sup>3</sup>/ : 2.4...2.8  
 100 s: (2.1...3.0)

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -3

Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 500  
 Del.quantity : 111.0...113.0  
 1000 : (109.0...115.0)

Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

**RATED SPEED**

1st version  
 Control lever  
 position degrees: 43...51

Testing:  
 1st rack travel in: 9.20  
 Speed rpm : 1145...1155

2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 600...660

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 750  
Rack travel in m: 11.40...11.60

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.35...9.55

#### Measurement

Speed 1/min : 500  
1st pressure hPa : 200  
Rack travel in m: 11.00...11.10  
2nd pressure hPa : 80  
Rack travel in m: 9.70...10.10  
3rd pressure hPa : 500  
Rack travel in m: 11.40...11.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 500  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 127.5...130.5  
1000 s: (125.0...133.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : -  
1000 s: (85.0...93.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.20  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 190.0...210.0  
1000 s: (185.0...215.0)  
Rack travel in mm : 19.40

#### HIGH IDLE

#### 1st version

Speed rpm : 1190  
Rack travel in mm : 5.70...5.90

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 24.0...28.0  
1000 s: (21.5...30.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

: JOHN DEERE # RE16418

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark = 15.5, after  
start of delivery cyl. 1.

#### APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a11  
 Edition : 02.05.89  
 Replaces : 1.9.88  
 Test oil : ISO-4113

Combination no. : 9 400 230 089

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1100A0C2190  
 -3R  
 Governor no. : 9 420 234 125

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 112.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

K01

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.60...10.70

Del.quantity cm<sup>3</sup>/ : 9.5...9.7

100 s: (9.3...9.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 95.5...97.5

1000 : (93.5...99.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 9.60  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 445...505

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.60  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

: C.D.C # 3911953

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a20  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 089CA  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1100AOC2190  
 Cust. part no. : 3911954  
 Customer-spec. information  
 Customer : C.D.C.  
 Engine : 6 C 8.3  
 1st version kW : 126.8  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42  
 Overflow valve : 1 417 413 047  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 017  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,6  
 Test lines : 1 680 750 014  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

K03

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100  
 Rack travel in mm : 10.70...10.80  
 Del.quantity cm3/ : 9.6...9.8  
 100 s: (9.4...10.0)  
 Spread cm3 : 0.3  
 100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 5.8...6.0  
 Del.quantity cm3/ : 1.6...2.0  
 100 s: (1.3...2.2)  
 Spread cm3 : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del.quantity : 96.5...98.5  
 1000 : (94.5...100.5)  
 Spread cm3 : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 46...54

Testing:

1st rack travel in: 9.70  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control Lever  
position degrees: 27...35  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 500...560

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 750  
Rack travel in m: 12.30...12.50

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 119.5...123.5  
1000 s: (117.5...125.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del. quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)

Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a21  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 089CB  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1250AOC2190

Cust. part no. : 3911958

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CT 8.3 ltr

1st version kw : 160.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.00...12.10

Del.quantity cm<sup>3</sup>/ : 12.1...12.3

100 s: (11.9...12.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 121.0...123.0

1000 : (119.0...125.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 48...56

Testing:



1st rack travel in: 11.00  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1355...1385  
3rd rack travel in: 4.00  
Speed rpm : 1360...1390  
4th rack travel in: 1450  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 26...34  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 495...555

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 750  
Rack travel in m: 12.40...12.60

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 122.0...126.0  
1000 s: (120.0...128.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00

Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a22  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 089CC  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1100AOC2190

Cust. part no. : 3911962

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CTA 8.3ltr

1st version kW : 174.5  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

K07

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 12.6...12.8

100 s: (12.4...13.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm3/ : 1.6...2.0  
 100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 126.5...128.5

1000 : (124.5...130.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 11.70  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
3rd rack travel in: 4.00  
Speed rpm : 1205...1235  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 455...515

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a23  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 089CD  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1000AOC2190

Cust. part no. : 3908566

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CTA 8.3

1st version kW : 171.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

K09

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.20...13.30

Del.quantity cm3/ : 13.1...13.3

100 s: (12.9...13.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 131.0...133.0

1000 : (129.0...135.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 12.20  
Speed rpm : 1050...1060  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
3rd rack travel in: 4.00  
Speed rpm : 1135...1165  
4th rack travel in: 1150  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.1

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 460...520

#### BREAKAWAY

1st version  
1mm rack travel less than  
  
full load rack tr: 12.20  
Speed rpm : 1050...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.50...5.70  
Del.quantity cm<sup>3</sup>/ : 14.0...18.0  
1000 s: (11.5...20.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a24  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 9 400 230 089CE

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1100AOC2190

Cust. part no. : 3911959

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CTA 8.3 ltr.

1st version kW : 157.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del.quantity cm<sup>3</sup>/ : 11.1...11.3

100 s: (10.9...11.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 111.0...113.0

1000 : (109.0...115.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 11.00  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 460...520

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 750  
Rack travel in m: 13.30...13.50

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 130.5...134.5  
1000 s: (128.5...136.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)

Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm  
before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a25  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 089CF  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...110DA0C2190  
 Cust. part no. : 3911543  
 Customer-spec. information  
 Customer : C.D.C.  
 Engine : 6 CT. 8.3 ltr.  
 1st version kW : 138.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C. : 38...42  
 Overflow valve : 1 417 413 047  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 017  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,6  
 Test Lines : 1 680 750 014  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

K13

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100  
 Rack travel in mm : 11.40...11.50  
 Del. quantity cm<sup>3</sup>/ : 10.6...10.8  
 100 s : (10.4...11.0)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 5.8...6.0  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.0  
 100 s : (1.3...2.2)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del. quantity : 106.5...108.5  
 1000 : (104.5...110.5)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 49...57

Testing:



1st rack travel in: 10.40  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1215...1245  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 27...35  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 520...580

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.40...11.50  
2nd speed rpm : 750  
Rack travel in m: 12.60...12.80

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm3/ : 125.0...129.0  
1000 s: (123.0...131.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)

Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm  
before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a26  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 089CG  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1000A0C2190

Customer-spec. information

Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 127.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C. : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.10...11.20

Del. quantity cm<sup>3</sup>/ : 10.0...10.2

100 s : (9.8...10.4)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s : (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del. quantity : 100.0...102.0

1000 : (98.0...104.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 38...46

Testing:

1st rack travel in: 10.10

Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1080...1110  
4th rack travel in: 1150  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 21...29  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 450...510

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 750  
Rack travel in m: 12.00...12.20

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 111.5...115.5  
1000 s: (109.5...117.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del. quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)

Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a27  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 089CH  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1050AOC2190

## Customer-spec. information

Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 131.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.10...11.20

Del.quantity cm<sup>3</sup>/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.5...5.7

Del.quantity cm<sup>3</sup>/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 101.5...103.5

1000 : (99.5...105.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 10.10

Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1145...1175  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control Lever  
position degrees: 26...34  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 480...540

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 750  
Rack travel in m: 12.40...12.60

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 119.5...123.5  
1000 s: (117.5...125.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.50...5.70  
Del.quantity cm<sup>3</sup>/ : 14.0...18.0  
1000 s: (11.5...20.5)

Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a28  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 089CI  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV500...1050A0C2190

Customer-spec. information

Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 123.0

Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.70...10.80

Del.quantity cm<sup>3</sup>/ : 9.6...9.8

100 s: (9.4...10.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 500.0

Rack travel in mm : 5.5...5.7

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 96.5...98.5

1000 : (94.5...100.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 53...61

Testing:

1st rack travel in: 9.70

Speed rpm : 1095...1105  
2nd rack travel in: 4.00  
Speed rpm : 1155...1225  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 35...44  
Setting point w/out bumper spring  
Speed rpm : 500  
Rack travel in mm : 5.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 500  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 590...650

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 750  
Rack travel in m: 12.20...12.40

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm3/ : 116.0...120.0  
1000 s: (114.0...122.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1095...1105

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 500  
Rack travel in mm : 5.50...5.70  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)

Spread cm3 : 3.50  
1000 s: (5.50)

#### Remarks:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a29  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 089CJ  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1050AOC2190

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 131.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 101.5...103.5

1000 : (99.5...105.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 10.10



Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1145...1175  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 26...34  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 480...540

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 750  
Rack travel in m: 12.40...12.60

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 119.5...123.5  
1000 s: (117.5...125.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.50...5.70  
Del.quantity cm<sup>3</sup>/ : 14.0...18.0  
1000 s: (11.5...20.5)

Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a30  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 089CK  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1250A0C2190

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CT 8.3 ltr

1st version kW : 160.0  
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.00...12.10

Del.quantity cm<sup>3</sup>/ : 12.1...12.3

100 s : (11.9...12.5)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s : (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 121.0...123.0

1000 : (119.0...125.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 48...56

Testing:

1st rack travel in: 11.00

Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1355...1385  
3rd rack travel in: 4.00  
Speed rpm : 1360...1390  
4th rack travel in: 1450  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 26...34  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 495...555

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 750  
Rack travel in m: 12.40...12.60

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm3/ : 122.0...126.0  
1000 s: (120.0...128.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00

Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

#### Remarks:

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm  
before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a31  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 089CL  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV500...1050A0C2190

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 123.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.70...10.80

Del.quantity cm<sup>3</sup>/ : 9.6...9.8

100 s: (9.4...10.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 500.0

Rack travel in mm : 5.5...5.7

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 96.5...98.5

1000 : (94.5...100.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 53...61

Testing:

1st rack travel in: 9.70

Speed rpm : 1095...1105  
2nd rack travel in: 4.00  
Speed rpm : 1155...1225  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 35...44  
Setting point w/out bumper spring  
Speed rpm : 500  
Rack travel in mm : 5.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 500  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 590...650

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 750  
Rack travel in m: 12.20...12.40

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm3/ : 116.0...120.0  
1000 s: (114.0...122.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1095...1105

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 500  
Rack travel in mm : 5.50...5.70  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)

Spread cm3 : 3.50  
1000 s: (5.50)

#### Remarks:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a32  
Edition : 02.05.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 9 400 230 089CM  
Injection pump  
Pump designation : PES6A100D320/3RS2691  
EP type number : 9 410 230 025  
Governor  
Governor design. : RSV400...1100A0C2190

Customer-spec. information  
Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 133.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
                  : (2.75...2.95)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.30...11.40

Del. quantity cm<sup>3</sup>/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.5...5.7

Del. quantity cm<sup>3</sup>/ : 1.2...1.6

100 s: (0.9...1.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 10.30

Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1210...1240  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 30...38  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 505...565

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.30...11.40  
2nd speed rpm : 750  
Rack travel in m: 12.40...12.60

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 116.5...120.5  
1000 s: (114.5...122.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.50...5.70  
Del.quantity cm<sup>3</sup>/ : 12.0...16.0  
1000 s: (9.5...18.5)

Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a33  
Edition : 02.05.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 9 400 230 089CN  
  
Injection pump  
Pump designation : PES6A100D320/3RS2691  
EP type number : 9 410 230 025  
Governor  
Governor design. : RSV400...1050AOC2190  
Governor no. : 9 420 234

## Customer-spec. information

Customer : C.D.C.  
  
Engine : 6 C 8.3

1st version kW : 174.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.90...13.00

Del. quantity cm<sup>3</sup>/ : 12.9...13.1

100 s: (12.7...13.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del. quantity : 129.0...131.0

1000 : (127.0...133.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 37...45

Testing:

1st rack travel in: 11.90



Speed rpm : 1095...1105  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 440...500

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.90  
Speed rpm : 1095...1105

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a34  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 089C0  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1100A0C2190

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 126.8  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 9.6...9.8  
 100 s: (9.4...10.0)

Spread cm3 : 0.3  
 100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 5.8...6.0  
 Del.quantity cm3/ : 1.6...2.0  
 100 s: (1.3...2.2)  
 Spread cm3 : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del.quantity : 96.5...98.5  
 1000 : (94.5...100.5)  
 Spread cm3 : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 46...54

Testing:  
 1st rack travel in: 9.70

Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 27...35  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 500...560

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 750  
Rack travel in m: 12.30...12.50

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle

L04

after start of delivery cyl. 1

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a35  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 089CP  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1000A0C2190

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CTA 8.3

1st version kW : 171.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.20...13.30

Del. quantity cm<sup>3</sup>/ : 13.1...13.3

100 s: (12.9...13.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.5...5.7

Del. quantity cm<sup>3</sup>/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del. quantity : 131.0...133.0

1000 : (129.0...135.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 12.20

Speed rpm : 1050...1060  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
3rd rack travel in: 4.00  
Speed rpm : 1135...1165  
4th rack travel in: 1150  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.1

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 460...520

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.20  
Speed rpm : 1050...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.50...5.70  
Del.quantity cm3/ : 14.0...18.0  
1000 s: (11.5...20.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

#### Remarks:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a36  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 089CQ  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1100AOC2190

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CTA 8.3 ltr.

1st version kW : 157.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C. : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del.quantity cm<sup>3</sup>/ : 11.1...11.3  
 100 s: (10.9...11.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 5.8...6.0  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.0  
 100 s: (1.3...2.2)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del.quantity : 111.0...113.0  
 1000 : (109.0...115.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 44...52

Testing:  
 1st rack travel in: 11.00

Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 460...520

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 750  
Rack travel in m: 13.30...13.50

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 130.5...134.5  
1000 s: (128.5...136.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than  
full load rack tr: 11.00  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del. quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)

Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a37  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 089CR  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1100AOC2190

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CT. 8.3 ltr.

1st version kW : 138.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C. : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.40...11.50

Del.quantity cm<sup>3</sup>/ : 10.6...10.8

100 s: (10.4...11.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 106.5...108.5

1000 : (104.5...110.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 49...57

Testing:

1st rack travel in: 10.40



Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1215...1245  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 27...35  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 520...580

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.40...11.50  
2nd speed rpm : 750  
Rack travel in m: 12.60...12.80

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 125.0...129.0  
1000 s: (123.0...131.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)

Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a38  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 089CS  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1000A0C2190

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 127.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.10...11.20

Del.quantity cm<sup>3</sup>/ : 10.0...10.2

100 s : (9.8...10.4)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s : (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 100.0...102.0

1000 : (98.0...104.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever  
 position degrees: 38...46

Testing:

1st rack travel in: 10.10

Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1080...1110  
4th rack travel in: 1150  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 21...29  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 450...510

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 750  
Rack travel in m: 12.00...12.20

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 111.5...115.5  
1000 s: (109.5...117.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del. quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)

Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : CUM 8,3 a39  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 089CT  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1250A0C2190

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CT 8.3 ltr

1st version kW : 160.0  
 Rated speed : 2500

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1250

Rack travel in mm : 12.00...12.10

Del. quantity cm<sup>3</sup>/ : 12.1...12.3

100 s: (11.9...12.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1250

Del. quantity : 121.0...123.0

1000 : (119.0...125.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

**RATED SPEED**

1st version

Control lever

position degrees: 48...56

Testing:

1st rack travel in: 11.00

Speed rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1355...1385

3rd rack travel in: 4.00  
Speed rpm : 1360...1390  
4th rack travel in: 1450  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 26...34  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4

Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 495...555

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 750  
Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del.quantity cm3/ : 122.0...126.0  
1000 s: (120.0...128.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:  
Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a40  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 089CU  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV500...1050AOC2190

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 123.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C. : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.70...10.80

Del.quantity cm<sup>3</sup>/ : 9.6...9.8

100 s: (9.4...10.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 500.0

Rack travel in mm : 5.5...5.7

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 96.5...98.5

1000 : (94.5...100.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 53...61

Testing:

1st rack travel in: 9.70

Speed rpm : 1095...1105  
2nd rack travel in: 4.00  
Speed rpm : 1155...1225  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 35...44  
Setting point w/out bumper spring  
Speed rpm : 500  
Rack travel in mm : 5.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 500  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 590...650

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 750  
Rack travel in m: 12.20...12.40

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 116.0...120.0  
1000 s: (114.0...122.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1095...1105

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 500  
Rack travel in mm : 5.50...5.70  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)

Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a41  
 Edition : 26.6.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 9 400 230 090

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1100A2C2190  
 -5R  
 Governor no. : 9 420 234 126

Customer-spec. information  
 Customer : C.D.C.

Engine : 6C 830

1st version kW : 112  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.30

Test nozzle holder  
 assembly : 1 688 901 016

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,5

Test lines : 9 680 271 029

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 2.90...3.00  
 : (2.85...3.05)  
 Rack travel in mm : 10.50  
 Firing order : 1-5-2-6-3-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.40...11.50

Del.quantity cm<sup>3</sup>/ : 9.4...9.6

100 s : (9.2...9.8)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 425  
 Rack travel in mm : 6.00...6.20

Del.quantity cm<sup>3</sup>/ : 1.7...2.1

100 s : (1.4...2.3)

Spread cm<sup>3</sup> : 0.35

100 s : (0.55)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 94.0...96.0

1000 : (92.0...98.0)

Spread cm<sup>3</sup> : 3.0

1000 : (6.0)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 41...49

Testing:  
 1st rack travel in: 10.40



Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
3rd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.6

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 450...510

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.40  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0  
1000 s: ( 130)  
Rack travel in mm : 19.00...21.00

Remarks:  
: C.D.C. # 390 6535

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a42  
 Edition : 26.6.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 9 400 230 091

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV425...1100A2C2190  
 -4R  
 Governor no. : 9 420 234 127

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CT-830

1st version kW : 126  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C. : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.30

Test nozzle holder  
 assembly : 1 688 901 016

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,5

Test lines : 9 680 271 029

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00X2,00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

L19

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1-5-2-6-3-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

---

Rack travel in mm : 11.00...11.10

---

Del. quantity cm<sup>3</sup>/ : 8.5...8.7  
 100 s : (8.3...8.9)

---

Spread cm<sup>3</sup> : 0.35  
 100 s : (0.6)

2nd speed rpm : 425  
 Rack travel in mm : 6.00...6.20  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.0  
 100 s : (1.3...2.2)

Spread cm<sup>3</sup> : 0.35  
 100 s : (0.55)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del. quantity : 85.5...87.5  
 1000 : (83.5...89.5)

Spread cm<sup>3</sup> : 3.5  
 1000 : (6.0)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 43...51

Testing:  
 1st rack travel in: 10.00

Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
3rd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.6

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 425  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 495...555

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 950  
Rack travel in m: 11.50...11.70  
3rd speed rpm : 750  
Rack travel in m: 12.60...12.80

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 105.0...109.0  
1000 s: (103.0...111.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0  
1000 s: ( 130)  
Rack travel in mm : 19.00...21.00

#### Remarks:

: C.D.C. # 390 6545

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a43  
 Edition : 26.6.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 9 400 230 094

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1100A2C2190  
 -7R  
 Governor no. : 9 420 234 132

Customer-spec. information  
 Customer : C.D.C.

Engine : 6C-830

1st version kW : 109.7  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.30

Test nozzle holder  
 assembly : 1 688 901 016

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,5

Test lines : 9 680 271 029

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

L21

Prestroke mm : 2.90...3.00  
 : (2.85...3.05)  
 Rack travel in mm : 10.50  
 Firing order : 1-5-2-6-3-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.40...11.50

Del. quantity cm<sup>3</sup>/ : 9.5...9.7  
 100 s: (9.3...9.9)

Spread cm<sup>3</sup> : 0.35  
 100 s: (0.6)

2nd speed rpm : 400  
 Rack travel in mm : 5.70...5.90  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.0  
 100 s: (1.3...2.2)  
 Spread cm<sup>3</sup> : 0.35  
 100 s: (0.55)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Del. quantity : 95.5...97.5  
 1000 : (93.5...99.5)  
 Spread cm<sup>3</sup> : 3.5  
 1000 : (6.0)

RATED SPEED

1st version  
 Control lever  
 position degrees: 39...47

Testing:  
 1st rack travel in: 10.40

Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
3rd rack travel in: 4.00  
Speed rpm : 1145...1175  
4th rack travel in: 1200  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 445...505

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0  
1000 s: ( 130)  
Rack travel in mm : 19.00...21.00

Remarks:  
: C.D.C. # 390 6538

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 j  
 Edition : 07.04.89  
 Replaces : 1.9.88  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 096  
 Injection pump  
 Pump designation : PES6A1000320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV425...900A4C2213-1R  
 Governor no. : 9 420 234 136

## Customer-spec. information

Customer : C.D.C.  
 Engine : 6 CT 8.3

1st version kW : 154.0  
 Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 830

Rack travel in mm : 13.40...13.50

Del.quantity cm<sup>3</sup>/ : 13.5...13.7

100 s: (13.3...13.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.5...5.7

Del.quantity cm<sup>3</sup>/ : 1.2...1.6

100 s: (0.9...1.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 830

Del.quantity : 135.0...137.0

1000 : (133.0...139.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 44...48

Testing:

1st rack travel in: 12.40  
Speed rpm : 925...935  
2nd rack travel in: 4.00  
Speed rpm : 960...990  
4th rack travel in: 1030  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 435...495

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.40  
Speed rpm : 925...935

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.50...5.70  
Del.quantity cm<sup>3</sup>/ : 12.0...16.0  
1000 s: (9.5...18.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

: C.D.C # 3908844

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark at 10, cam  
rotation angle after start of delivery,  
cylinder 1

#### APPLICATION

L24

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a12  
 Edition : 07.04.89  
 Replaces : 1.9.88  
 Test oil : ISO-4113

Combination no. : 9 400 230 097

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1100A0C2190  
 -8R  
 Governor no. : 9 420 234 137

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CT 8.3

1st version kw : 156.6  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

L25

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.30...12.40

Del.quantity cm<sup>3</sup>/ : 12.2...12.4

100 s: (12.0...12.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.6...5.8

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 122.5...124.5

1000 : (120.5...126.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:



1st rack travel in: 11.30  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
3rd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: ?  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.2

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 445...505

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.30  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:  
: C.D.C. # 3911952

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark at 10, cam  
rotation angle after start of delivery,  
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a59  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 097BA  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1000AOC2190

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CT 8.3

1st version kW : 151.4  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42  
 Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness : 6.00X2.00X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 12.10...12.20  
 Del.quantity cm3/ : 11.9...12.1  
 100 s: (11.7...12.3)  
 Spread cm3 : 0.3  
 100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 5.6...5.8  
 Del.quantity cm3/ : 1.6...2.0  
 100 s: (1.3...2.2)  
 Spread cm3 : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Del.quantity : 119.0...121.0  
 1000 : (117.0...123.0)  
 Spread cm3 : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 34...42

Testing:  
 1st rack travel in. 11.10

Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1075...1105  
3rd rack travel in: 4.00  
Speed rpm : 1080...1110  
4th rack travel in: 1150  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.2

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 430...490

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.10  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark at 10, cam  
rotation angle after start of delivery,  
cylinder 1

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : CUM 8,3 a44  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 097BB  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1050A0C2190

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 148.0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**  
 Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1050

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 12.2...12.4  
 100 s : (12.0...12.6)

Spread cm3 : 0.3  
 100 s : (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 5.3...5.5  
 Del.quantity cm3/ : 1.4...1.8  
 100 s : (1.1...2.0)  
 Spread cm3 : 0.3  
 100 s : (0.5)

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1050  
 Del.quantity : 122.0...124.0  
 1000 : (120.0...126.0)  
 Spread cm3 : 3.50  
 1000 : (6.00)

**RATED SPEED**

1st version  
 Control lever  
 position degrees: 43...51

Testing:  
 1st rack travel in: 11.40

Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1135...1165  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.9

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.30...5.50  
Rack travel in mm : 2.00  
Speed rpm : 430...490

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 750  
Rack travel in m: 13.70...13.90

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 141.0...145.0  
1000 s: (139.0...147.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.30...5.50  
Del.quantity cm<sup>3</sup>/ : 14.0...18.0  
1000 s: (11.5...20.5)

Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark at 10, cam  
rotation angle after start of delivery,  
cylinder 1

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a45  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 097BC  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1100A0C2190

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CT 8.3

1st version kW : 156.6  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.30...12.40

Del. quantity cm<sup>3</sup>/ : 12.2...12.4

100 s: (12.0...12.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.6...5.8

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 122.5...124.5

1000 : (120.5...126.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 48...56

Testing:

1st rack travel in: 11.30

Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 28...36  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.2

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 485...545

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.30  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Del. quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

:  
Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark at 10, cam  
rotation angle after start of delivery,  
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a46  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 097BD  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1000AOC2190

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CT 8.3

1st version kW : 151.4  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 11.9...12.1

100 s: (11.7...12.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 119.0...121.0

1000 : (117.0...123.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 34...42

Testing:

1st rack travel in: 11.10



Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1075...1105  
3rd rack travel in: 4.00  
Speed rpm : 1080...1110  
4th rack travel in: 1150  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control Lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.2

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 430...490

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.10  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark at 10, cam  
rotation angle after start of delivery,  
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a47  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 097BE  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1050A0C2190

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 148.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.40...12.50

Del.quantity cm<sup>3</sup>/ : 12.2...12.4

100 s : (12.0...12.6)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.3...5.5

Del.quantity cm<sup>3</sup>/ : 1.4...1.8

100 s : (1.1...2.0)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 122.0...124.0

1000 : (120.0...126.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 11.40

Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1135...1165  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.9

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.30...5.50  
Rack travel in mm : 2.00  
Speed rpm : 430...490

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 750  
Rack travel in m: 13.70...13.90

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm3/ : 141.0...145.0  
1000 s: (139.0...147.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.30...5.50  
Del.quantity cm3/ : 14.0...18.0  
1000 s: (11.5...20.5)

Spread cm3 : 3.50  
1000 s: (5.50)

#### Remarks:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark at 10, cam  
rotation angle after start of delivery,  
cylinder 1

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a13  
 Edition : 07.04.89  
 Replaces : 1.9.88  
 Test oil : ISO-4113

Combination no. : 9 400 230 099

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1050A0C2190  
 -10R  
 Governor no. : 9 420 234 142

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 89.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

MO9

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 9.60...9.70

Del.quantity cm<sup>3</sup>/ : 8.2...8.4

100 s: (8.0...8.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.6...5.8

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 82.0...84.0

1000 : (80.0...86.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 8.60  
Speed rpm : 1095...1105  
2nd rack travel in: 4.00  
Speed rpm : 1125...1155  
4th rack travel in: 1200  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.2

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 460...520

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 9.60...9.70  
2nd speed rpm : 750  
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 86.5...90.5  
1000 s: (84.5...92.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.60  
Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Del. quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)

M10

Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a49  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 9 400 230 099AB

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1000A0C2190

Cust. part no. : 3911951

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 105.9  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

M11

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.80...10.90

Del. quantity cm<sup>3</sup>/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del. quantity : 98.5...100.5

1000 : (96.5...102.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing:

1st rack travel in: 9.80  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1085...1115  
3rd rack travel in: 4.00  
Speed rpm : 1090...1120  
4th rack travel in: 1200  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 455...515

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.80  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : CUM 8,3 a50  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 099AC  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1250AOC2190

Cust. part no. : 3911947

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 119.3  
 Rated speed : 2500

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

M13

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1250

Rack travel in mm : 11.30...11.40

Del.quantity cm<sup>3</sup>/ : 10.6...10.8

100 s : (10.4...11.0)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.6...5.8

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s : (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1250

Del.quantity : 106.0...108.0

1000 : (104.0...110.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

**RATED SPEED**

1st version

Control lever

position degrees: 51...59

Testing:



1st rack travel in: 10.30  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1355...1385  
4th rack travel in: 1450  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 27...35  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.2

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 485...545

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.30  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a51  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 099AD  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1100AOC2190

Cust. part no. : 3911959

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 98.4  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

M15

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.00...10.10

Del.quantity cm3/ : 8.8...9.0

100 s: (8.6...9.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 88.0...90.0

1000 : (86.0...92.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 45...54

Testing:

1st rack travel in: 9.00  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
3rd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 26...34  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 485...545

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.00...10.10  
2nd speed rpm : 800  
Rack travel in m: 10.60...10.80

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 92.0...96.0  
1000 s: (90.0...98.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.00  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00

M16

Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a52  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 099AE  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1050A0C2190

Cust. part no. : 3911950

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 109.6  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

M17

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.40...11.50

Del.quantity cm<sup>3</sup>/ : 10.8...11.0

100 s : (10.6...11.2)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s : (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 108.5...110.5

1000 : (106.5...112.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 10.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
3rd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1200  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 470...530

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.40  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a53  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 099AF  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1100AOC2190

Cust. part no. : 3915955

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 111.9  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

M19

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.30...11.40

Del.quantity cm<sup>3</sup>/ : 10.5...10.7

100 s: (10.3...10.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 105.5...107.5

1000 : (103.5...109.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 10.30  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
3rd rack travel in: 4.00  
Speed rpm : 1205...1235  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 475...535

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.30  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a54  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 9 400 230 099AG

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1000A0C2190

Cust. part no. : 3915958

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 105.9  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C. : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

M21

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.80...10.90

Del. quantity cm<sup>3</sup>/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del. quantity : 98.5...100.5

1000 : (96.5...102.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing:



1st rack travel in: 9.80  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1085...1115  
3rd rack travel in: 4.00  
Speed rpm : 1090...1120  
4th rack travel in: 1200  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4

Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 455...515

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.80  
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a55  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 9 400 230 099AH

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1250ADC2190

Cust. part no. : 3915954

## Customer-spec. information

Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 119.3

Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

M23

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.30...11.40

Del.quantity cm<sup>3</sup>/ : 10.6...10.8

100 s: (10.4...11.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.6...5.8

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 106.0...108.0

1000 : (104.0...110.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 51...59

Testing:

1st rack travel in: 10.30  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1355...1385  
4th rack travel in: 1450  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 27...35  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.2

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 485...545

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.30  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a56  
Edition : 02.05.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 9 400 230 099AI  
Injection pump  
Pump designation : PES6A100D320/3RS2691  
EP type number : 9 410 230 025  
Governor  
Governor design. : RSV400...1100AOC2190

Cust. part no. : 3915956

Customer-spec. information  
Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 98.4  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

M25

Prestroke mm : 2.80...2.90  
                  : (2.75...2.95)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.00...10.10

Del. quantity cm<sup>3</sup>/ : 8.8...9.0

100 s : (8.6...9.2)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s : (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 88.0...90.0

1000 : (86.0...92.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 45...54

Testing:

1st rack travel in: 9.00  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
3rd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 26...34  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 485...545

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.00...10.10  
2nd speed rpm : 800  
Rack travel in m: 10.60...10.80

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 92.0...96.0  
1000 s: (90.0...98.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.00  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00

M26

Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a57  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 099AJ  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1050A0C2190

Cust. part no. : 3915957

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 109.6  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

M27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.40...11.50

Del.quantity cm<sup>3</sup> : 10.8...11.0

100 s : (10.6...11.2)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm<sup>3</sup> : 1.6...2.0

100 s : (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 108.5...110.5

1000 : (106.5...112.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 10.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
3rd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1200  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 470...530

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.40  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

#### Remarks:

:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a58  
 Edition : 26.6.89  
 Replaces : -  
 Test oil : ISO-4113  
  
 Combination no. : 9 400 230 101  
  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV425...1250A2C2190  
 -12R  
 Governor no. : 9 420 234 144  
  
 Customer-spec. information  
 Customer : C.D.C.  
  
 Engine : 6 CT 8.3  
  
 1st version kW : 160.3  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42  
  
 Overflow valve : 1 417 413 047  
  
 Inlet press., bar : 1.30  
  
 Test nozzle holder  
 assembly : 1 688 901 016  
  
 Opening  
 pressure, bar : 207...210  
  
 Orifice plate  
 diameter mm : 0,5  
  
 Test lines : 1 681 271 029  
  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6,00X2,00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

NO1

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1-5-2-6-3-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250  


---

 Rack travel in mm : 12.20...12.30  


---

 Del. quantity cm<sup>3</sup>/ : 10.6...10.8  
 100 s : (10.4...11.0)  


---

 Spread cm<sup>3</sup> : 0.35  
 100 s : (0.6)

2nd speed rpm : 425  
 Rack travel in mm : 5.90...6.10  
 Del. quantity cm<sup>3</sup>/ : 1.8...2.2  
 100 s : (1.5...2.4)  
 Spread cm<sup>3</sup> : 0.2  
 100 s : (0.3)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Del. quantity : 106.5...108.5  
 1000 : (104.5...110.5)  
 Spread cm<sup>3</sup> : 3.5  
 1000 : (6.0)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 47...53

Testing:  
 1st rack travel in: 11.20



Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1350...1380  
3rd rack travel in: 4.00  
Speed rpm : 1360...1390  
4th rack travel in: 1450  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 480...540

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 750  
Rack travel in m: 12.55...12.75

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 108.5...112.5  
1000 s: (106.5...114.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0  
1000 s: ( 130)  
Rack travel in mm : 19.00...21.00

#### Remarks:

: C.D.C. # 390 7180

Adjust stop lever to 0.5...1.0 mm  
before stop.

N02

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : CUM 8,3 b 7  
 Edition : 02.05.89  
 Replaces : 20.12.88  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 103  
 Injection pump  
 Pump designation : PES6A100D410RS2691-2  
 EP type number : 9 410 230 028  
 Governor  
 Governor design. : RQV350...1100AB1227R  
 Governor no. : 9 420 231 015

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CT 8.3

1st version kW : 156.6  
 Rated speed : 2200

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1100

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 12.6...12.8

100 s: (12.4...13.0)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.6

100 s: (0.8)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 1100

travel mm : 7.70...7.70

2nd speed rpm : 1150

travel mm : 8.00...8.60

3rd speed rpm : 1290

travel mm : 9.50...10.10

4th speed rpm : 350

travel mm : 1.20...1.60

5th speed rpm : 600

travel mm : 3.90...4.50

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1290

Rack travel in mm : 6.70...9.30

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 126.5...128.5  
1000 : (124.5...130.5)  
Spread cm3 : 4.00  
1000 : (6.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 60...68

#### Testing:

1st rack travel in: 11.60  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1260...1290  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 9...17  
Speed rpm : 350  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 440...500

Aneroid/Altitude:  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.60...12.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.50...10.70  
2nd pressure hPa : 405  
Rack travel in m: 10.90...11.00  
3rd pressure hPa : 535  
Rack travel in m: 11.80...12.20

#### START CUT-OUT

Speed 1/min : 260 (280)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 85.0...89.0  
1000 s: (83.0...91.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 165.0...185.0  
1000 s: (160.0...190.0)  
Rack travel in mm : 15.30...15.70

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.60...5.80  
Del.quantity cm3/ : 18.0...22.0  
1000 s: (15.5...24.5)  
Spread cm3 : 6.00  
1000 s: (8.00)

Remarks:

: C.D.C. # 3912645

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark is at 7, after  
start of delivery.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 k 1  
 Edition : 07.04.89  
 Replaces : 15.6.88  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 106  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1050AOC2216  
 -1R  
 Governor no. : 9 420 234 154

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CT 8.3  
 1st version kW : 141.7  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42  
 Overflow valve : 1 417 413 047  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 017  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,6  
 Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

N05

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - , : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050  
 Rack travel in mm : 11.90...12.00  
 Del.quantity cm3/ : 11.5...11.7  
 100 s: (11.3...11.9)  
 Spread cm3 : 0.3  
 100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 5.8...6.0  
 Del.quantity cm3/ : 1.6...2.0  
 100 s: (1.3...2.2)  
 Spread cm3 : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Del.quantity : 115.0...117.0  
 1000 : (113.0...119.0)  
 Spread cm3 : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 42...50

Testing:  
 1st rack travel in: 10.90  
 Speed rpm : 1090...1100  
 2nd rack travel in: 4.00

Speed rpm : 1145...1175  
4th rack travel in: 1200  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 470...530

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.90...12.00  
2nd speed rpm : 750  
Rack travel in m: 13.20...13.40

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 134.0...138.0  
1000 s: (132.0...140.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.90  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (132.0...158.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

: C.D.C. # 3911540

Adjust stop lever to 0.5...1.0 mm  
before stop.

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 h14  
 Edition : 26.6.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 108  
 Injection pump  
 Pump designation : PES6A100D410RS2676-1  
 EP type number : 9 410 230 024  
 Governor  
 Governor design. : RSV450...1050A2C2204  
 -1L  
 Governor no. : 9 420 234 163

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466 AT

1st version kW : 120  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 9 681 271 001

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00X2,00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55  
 : (2.40...2.60)

N07

Rack travel in mm : 10.50  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.00...10.10

Del.quantity cm3/ : 10.4...10.6

100 s: (10.2...10.8)

Spread cm3 : 0.35

100 s: (0.6)

2nd speed rpm : 450

Rack travel in mm : 5.30...5.50

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.35

100 s: (0.55)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 104.0...106.0

1000 : (102.0...108.0)

Spread cm3 : 3.5

1000 : (6.0)

RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 9.00

Speed rpm : 1095...1105

2nd rack travel in: 4.00

Speed rpm : 1155...1165

3rd rack travel in: 4.00  
Speed rpm : 1160...1180  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 4.9  
Speed rpm : 450  
Rack travel in mm : 5.30...5.50  
Rack travel in mm : 2.00  
Speed rpm : 590...650

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 10.00...10.10  
2nd speed rpm : 650  
Rack travel in m: 10.60...10.80

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 109.0...113.0  
1000 s: (107.0...115.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.00  
Speed rpm : 1095...1105

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 170.0  
1000 s: ( 165.0)  
Rack travel in mm : 19.00...21.00

#### HIGH IDLE

##### 1st version

Speed rpm : 1150  
Rack travel in mm : 4.60...5.00

#### Remarks:

: JOHN DEERE # RE29233

Screw in torque-control-spring  
retainer to make contact at 650 l/min.

Start-of-delivery mark at control-rod  
travel 10.5 mm and 15, after start of  
delivery.

#### APPLICATION

Excavator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a60  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 9 400 230 109

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 030  
 Governor  
 Governor design. : RSV450...1100A0C2190  
 -41R  
 Governor no. : 0 420 233 247

Customer-spec. information  
 Customer : C.D.C.

Engine : 6CT830

1st version kW : 117.1  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C. : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

N09

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.20...10.30

Del.quantity cm<sup>3</sup>/ : 8.9...9.1

100 s : (8.7...9.3)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 450.0  
 Rack travel in mm : 5.7...5.9  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.0  
 100 s : (1.3...2.2)

Spread cm<sup>3</sup> : 0.3  
 100 s : (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 89.0...91.0

1000 : (87.0...93.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 47...55

Testing:



1st rack travel in: 9.20  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
3rd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 29...37  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 450  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 525...585

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 750  
Rack travel in m: 10.80...11.00

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 90.5...94.5  
1000 s: (88.5...96.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.20  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 450  
Rack travel in mm : 5.70...5.90

N10

Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

: C.D.C. # 3915683

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a61  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 110  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 -4  
 EP type number : 9 410 230 030  
 Governor  
 Governor design. : RSV450...1100A0C2190  
 -42R  
 Governor no. : 0 420 233 248

Customer-spec. information  
 Customer : C.D.C.

Engine : 6CT830

1st version kW : 150.6  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

N11

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Phasing :  
 Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100  
 Rack travel in mm : 12.10...12.20  
 Del.quantity cm<sup>3</sup>/ : 11.8...12.0  
 100 s : (11.6...12.2)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.6)

2nd speed rpm : 450.0  
 Rack travel in mm : 5.7...5.9  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.0  
 100 s : (1.3...2.2)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del.quantity : 118.5...120.5  
 1000 : (116.5...122.5)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 42...50

Testing:  
1st rack travel in: 11.10  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 5.3

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 450  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 500...560

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.10...12.20  
2nd speed rpm : 750  
Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 750  
Del.quantity cm3/ : 133.0...137.0  
1000 s: (131.0...139.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.10  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 450  
Rack travel in mm : 5.70...5.90

N12

Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:  
: C.D.C. # 3915685  
Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm  
before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a62  
 Edition : 02.05.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 9 400 230 111

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 -4

EP type number : 9 410 230 030  
 Governor  
 Governor design. : RSV450...110QADC2190  
 -4OR

Governer no. : 0 420 233 246

Customer-spec. information  
 Customer : C.D.C.

Engine : 6CT830

1st version kW : 134.2  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

N13

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Phasing :  
 Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

---

Rack travel in mm : 11.20...11.30

---

Del.quantity cm<sup>3</sup>/ : 10.1...10.3  
 100 s: (9.9...10.5)

---

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)

2nd speed rpm : 450.0  
 Rack travel in mm : 5.7...5.9  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.0  
 100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del.quantity : 101.0...103.0  
 1000 : (99.0...105.0)

Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 49...57

Testing:

1st rack travel in: 10.20  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1210...1240  
3rd rack travel in: 4.00  
Speed rpm : 1215...1245  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 31...39  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 5.3

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 450  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 535...595

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.20...11.30  
2nd speed rpm : 750  
Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 110.5...114.5  
1000 s: (108.5...116.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 450

Rack travel in mm : 5.70...5.90  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

: C.D.C. # 3915684

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm  
before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a10  
 Edition : 02.05.89  
 Replaces : 14.1.88  
 Test oil : ISO-4113

Combination no. : 9 400 230 115

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1250AOC2190  
 -24R  
 Governor no. : 9 420 234 178

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CTA 8.3

1st version kW : 131.0  
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

N15

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

---

Rack travel in mm : 10.90...11.00

---

Del.quantity cm<sup>3</sup>/ : 9.9...10.1  
 100 s: (9.7...10.3)

---

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 5.3...5.5  
 Del.quantity cm<sup>3</sup>/ : 1.2...1.6  
 100 s: (0.9...1.8)

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Del.quantity : 99.0...101.0  
 1000 : (97.0...103.0)

Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 51...59

Testing:

1st rack travel in: 9.90  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1360...1390  
4th rack travel in: 1450  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 26...34  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.9

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.30...5.50  
Rack travel in mm : 2.00  
Speed rpm : 470...530

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.90  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.30...5.50  
Del.quantity cm3/ : 12.0...16.0  
1000 s: (9.5...18.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks: : C.D.C. # 3915981

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11, cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a 9  
 Edition : 02.05.89  
 Replaces : 1.9.88  
 Test oil : ISO-4113

Combination no. : 9 400 230 116

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1050A0C2190  
 -25R  
 Governor no. : 9 420 234 182

## Customer-spec. information

Customer : C.D.C

Engine : 6 CT 8.3

1st version kW : 154.4  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

N17

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.40...12.50

Del.quantity cm<sup>3</sup>/ : 12.2...12.4

100 s : (12.0...12.6)

Spread cm<sup>3</sup> : 0.4

100 s : (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s : (1.3...2.2)

Spread cm<sup>3</sup> : 0.6

100 s : (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 122.5...124.5

1000 : (120.5...126.5)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 47...55

Testing:



1st rack travel in: 11.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1275  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 28...36  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 480...540

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.40  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

Remarks:  
: C.D.C. # 3915962

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark at 10, cam  
rotation angle after start of delivery,  
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 c 6  
 Edition : 07.04.89  
 Replaces : 30.9.88  
 Test oil : ISO-4113

Combination no. : 9 400 230 117

Injection pump  
 Pump designation : PES6A95D41ORS2522-2  
 EP type number : 9 410 230 032  
 Governor  
 Governor design. : RSV425...1100A2C2161  
 -3L  
 Governor no. : 9 420 234 183

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466TR20

1st version kW : 110.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 125...145

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 1.85...1.95  
 : (1.80...2.00)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 8.80...8.90

Del.quantity cm<sup>3</sup>/ : 8.7...8.9

100 s: (8.5...9.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 4.8...5.0

Del.quantity cm<sup>3</sup>/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 600

Del.quantity : 87.5...89.5

1000 : (85.5...91.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever  
position degrees: 48...56

Testing:  
1st rack travel in: 7.80  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1190...1200  
4th rack travel in: 1300  
Speed rpm : 0.30...1.30

LOW IDLE 1  
Control lever  
position degrees: 24...32  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 4.4

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 4.80...5.00  
Rack travel in mm : 2.00  
Speed rpm : 565...625

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 8.80...8.90  
2nd speed rpm : 700  
Rack travel in m: 9.90...10.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 240  
Rack travel mm : 9.60...9.70

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 200  
Rack travel in m: 9.10...9.50

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 600  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 98.5...101.5  
1000 s: (96.0...104.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : -  
1000 s: (72.0...80.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 7.80  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...180.0  
1000 s: (155.0...185.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 4.80...5.00  
Del.quantity cm<sup>3</sup>/ : 11.0...15.0  
1000 s: (8.5...17.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks: : JOHN DEERE # RE32013

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark 16, cam angle  
after start of delivery cyl. 1

Starting/full-load transition speed  
from holding magnet = 450 1/min.

#### APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 c 7  
 Edition : 07.04.89  
 Replaces : 30.9.88  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 118  
 Injection pump  
 Pump designation : PES6A95D41ORS2522-2  
 EP type number : 9 410 230 032  
 Governor  
 Governor design. : RSV425...1100A2C2161  
 -4L  
 Governor no. : 9 420 234 184

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466TRW-06

1st version kW : 98.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 135...155

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 1.85...1.95  
 : (1.80...2.00)

Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 8.20...8.30

Del. quantity cm<sup>3</sup>/ : 7.9...8.1

100 s: (7.7...8.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 4.8...5.0

Del. quantity cm<sup>3</sup>/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 600

Del. quantity : 79.0...81.0

1000 : (77.0...83.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 49...57

Testing:  
1st rack travel in: 7.20  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1190...1200  
4th rack travel in: 1300  
Speed rpm : 0.30...1.30

LOW IDLE 1  
Control lever  
position degrees: 27...35  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 4.4

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 4.30...4.50  
Rack travel in mm : 2.00  
Speed rpm : 590...650

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 8.20...8.30  
2nd speed rpm : 700  
Rack travel in m: 9.20...9.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 213  
Rack travel mm : 9.20...9.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.80...9.00  
2nd pressure hPa : 193  
Rack travel in m: 8.80...9.20

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 600  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 86.0...89.0  
1000 s: (83.5...91.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : -  
1000 s: (69.5...77.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 7.20  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...180.0  
1000 s: (155.0...185.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 4.80...5.00  
Del.quantity cm<sup>3</sup>/ : 11.0...15.0  
1000 s: (8.5...17.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

: JOHN DEERE # RE31629

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark 16, cam angle  
after start of delivery cyl. 1

Starting/full-load transition speed  
from holding magnet = 450 1/min.

#### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 b 4  
 Edition : 07.04.89  
 Replaces : 1.9.88  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 119  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 -2  
 EP type number : 9 410 230 028  
 Governor  
 Governor design. : RQV350...1250AB1235R  
 Governor no. : 9 420 231 020

## Customer-spec. information

Customer : C.D.C.

Engine : 6 CT-830

1st version kW : 157.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.90...12.00

Del. quantity cm<sup>3</sup>/ : 12.5...12.7

100 s : (12.3...12.9)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.1...5.3

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s : (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1400

travel mm : 8.40...8.50

2nd speed rpm : 1500

travel mm : 9.10...9.30

3rd speed rpm : 350

travel mm : 0.70...1.10

4th speed rpm : 450

travel mm : 1.60...2.00

5th speed rpm : 250

travel mm : 0.10...0.50

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1550

Rack travel in mm : 6.70...9.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 700  
Del. quantity : 125.0...127.0  
1000 : (123.0...129.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 41...49

Testing:  
1st rack travel in: 10.90  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1405...1435  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 9...15  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.2

#### Testing:

Speed rpm : 250  
Minimum rack travel: 7.80  
Speed rpm : 350  
Rack travel in mm : 5.10...5.30

#### CONSTANT REGULATION

Speed rpm : 350...500

#### TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 11.90...12.00  
2nd speed rpm : 750  
Rack travel in m: 12.30...12.50  
3rd speed rpm : 1200  
Rack travel in m: 11.90...12.00  
4th speed rpm : 800  
Rack travel in m: 12.30...12.50

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 12.30...12.50

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 200  
Rack travel in m: 9.80...9.90  
3rd pressure hPa : 390  
Rack travel in m: 11.20...11.60

#### START CUT-OUT

Speed 1/min : 270 (280)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 750  
Del. quantity cm<sup>3</sup> / : 128.0...132.0  
1000 s: (126.0...134.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup> / : 61.5...65.5  
1000 s: (59.5...67.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.90  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup> / : 160.0...180.0  
1000 s: (155.0...185.0)  
Rack travel in mm : 14.60...14.80

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.10...5.30  
Del. quantity cm<sup>3</sup> / : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

: C.D.C. # 3912636

Start-of delivery mark/lock = 7.5,  
angular displacement of the cam after  
start of delivery of cylinder 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 5,9 b 1  
 Edition : 07.04.89  
 Replaces : 15.6.88  
 Test oil : ISO-4113

Combination no. : 9 400 230 121

Injection pump  
 Pump designation : PES6A95D32ORS2750  
 EP type number : 0 410 896 906  
 Governor  
 Governor design. : RQV350...1350AB1236-1R  
 Governor no. : 9 420 231 022

Customer-spec. information  
 Customer : NAVISTAR

Engine : MARS DT 360

1st version kW : 126.0  
 Rated speed : 2700

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp., C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 110

Opening  
 pressure, bar : 250...253

Orifice plate  
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + -, : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 11.10...11.20

Del. quantity cm<sup>3</sup>/ : 7.3...7.5

100 s: (7.1...7.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.2...5.4

Del. quantity cm<sup>3</sup>/ : 1.5...1.9

100 s: (1.2...2.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1400  
 travel mm : 8.50...8.50

2nd speed rpm : 1500  
 travel mm : 9.30...9.50

3rd speed rpm : 350  
 travel mm : 1.00...1.00

4th speed rpm : 450  
 travel mm : 1.90...2.40

5th speed rpm : 250  
 travel mm : 0.10...0.50

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1535  
 Rack travel in mm : 6.70...9.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1350



Aneroid pressure h: 900  
Del. quantity : 73.0...75.0  
1000 : (71.0...77.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 45...53

#### Testing:

1st rack travel in: 10.10  
Speed rpm : 1415...1445  
2nd rack travel in: 4.00  
Speed rpm : 1530...1540  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 8...16  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 250  
Minimum rack travel: 7.80  
Speed rpm : 350  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00

#### CONSTANT REGULATION

Speed rpm : 350...500

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 11.10...11.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.70...8.90  
2nd pressure hPa : 320  
Rack travel in m: 9.90...10.00  
3rd pressure hPa : 230  
Rack travel in m: 9.20...9.60

#### START CUT-OUT

Speed 1/min : 290 (300)

N26

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 55.5...59.5  
1000 s: (53.5...61.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1415...1445

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 125.0...145.0  
1000 s: (120.0...150.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.20...5.40  
Del. quantity cm<sup>3</sup>/ : 15.0...19.0  
1000 s: (12.5...21.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

: NAVISTAR  
: # 1811834C92

Limit shutoff stop screw to 1.0 mm.